EXPLORING SPORT MOTIVATION AND MULTI-DIMENSIONAL WELLNESS IN NCAA DIVISION II STUDENT-ATHLETES

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EXPLORING SPORT MOTIVATION AND MULTI-DIMENSIONAL WELLNESS IN NCAA DIVISION II STUDENT-ATHLETES

Too few studies relating to motivation and wellness have targeted the NCAA Division II student-athlete (SA) population. PURPOSES: To examine differences in SAs' sport motivation (SM) types over three time points as well as multi-dimensional wellness (MDW) levels in SAs during one time point. METHODS: Overall, 530 Division II SAs (nmales = 355, nfemales = 175) with an overall age range of 18 to 23 (M = 19.40, SD = 1.33) from 21 teams voluntarily completed the 18-item Self-Determination Theory-based SM Scale II used to measure six motivation types, the 45-item MDW Inventory used to measure nine wellness dimensions, and a demographics questionnaire. Repeated measures Analyses of Variance (ANOVA) and 2x2x3 Mixed ANOVAs were used to analyze SM types while a multivariate ANOVA was used to analyze MDW with an alpha level of 0.05 set for statistical significance. RESULTS: Analyses demonstrated statistically significant differences in SM types over time ($p = .05$), interactions and differences in SM types between interactive/coactive and male/female SAs ($p = .05$), and interactions and differences in MDW levels between male/female SAs and SAs who completed/did not complete a college wellness course ($p = .05$). CONCLUSIONS: Findings suggested that autonomous-based SM types decreased over time whereas amotivation increased over time indicating possible athlete burnout. Interactive and female SAs showed similarities also representative of athlete burnout. SAs who completed the MDW course demonstrated higher physical wellness exercise scores than SAs who did not. Female SAs had higher means in five wellness dimensions when compared to male SAs. SAs who completed the course showed higher means for seven wellness dimensions versus SAs who did not. Further research should ensue to

better understand motivation and wellness on a national scale examining Division I, II and III and NAIA athletes in order to provide more generalizable results.

Brent L. Arnold, Ph.D., ATC, FNATA, Committee Chair

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CHAPTER ONE: INTRODUCTION

1.1 Background

Early in life, there is a pivotal time of extensive exploration within self and identity that occurs from 18 to 25 years of age, termed as emerging adulthood (Arnett, 2000). Not surprisingly, emerging adults (EAs) make up roughly 20 million students currently attending American colleges and universities (National Center for Educational Statistics, 2016). Upon matriculation, a majority of students often experience significant changes to their own physical, emotional, mental and spiritual well-being (Rozmus, Wysochansky & Mixon, 2005). While these new changes can be viewed as favorable, the pressures associated with academics, socialization to college life and a new discovery of empowerment over one's decisions and lifestyle behaviors can impact a student negatively (Gores, 2008; Rozmus, Wysochansky & Mixon, 2005; Von Ah, Ebert, Ngamvitroj, Park & Kang, 2004). For example, previous studies show that college students who indicated having a high level of stress are prone to less than desirable academic performance and more vulnerable to the continuation of increased psychosocial stress. These issues may have the potential to manifest into stress-related mental health issues, nonfatal/self-inflicted injuries and suicide (Conley Travers & Bryant, 2013). Therefore, this population has been gaining attention within the areas of research, practice, and education.

Within the EA population, it is estimated that nearly 460,000 academic EAs are student-athletes (SAs) with their own established subculture (National Collegiate Athletics Association [NCAA], 2016a). At the NCAA Division II level, there are approximately 119,000 SAs competing on an athletic team at their institution (NCAA, 2016c). Interestingly, SAs have similar transitions and risks as the non-athlete EAs yet often remain at heightened levels of stress due to the demand of balancing the dual roles of being a student and an athlete (Armstrong & Oomen-Early, 2009; Brown, Glastetter-Fender, and Shelton, 2000; Cresswell, 2009; DeFreese & Smith, 2014; Dyson & Rank, 2006; Eklund & Cresswell, 2007; Giacobbi, Lynn, & Wetherington, 2004; Hammond, Gialloreto, Kubas, & Davis, 2013; Horton & Mack, 2000; NCAA, 2014; Person,

Benson-Quaziena, & Rogers, 2001; Petitpas and Buntrock, 1995; Raglin & Hanin, 2000; Rozmus, Wysochansky & Mixon, 2005; Settles, Sellers & Dumas, 2002; Watson & Kissinger, 2007). Additionally, studies have shown SAs are faced with additional stressors such as primary identity issues, time management stressors (i.e., practices, competitions, travel, balancing academic commitments, missing class), negative relationships with coaches, parents, professors and teammates, and social isolation from non-athlete students. These additional stressors have the potential to manifest as emotional, physical or developmental difficulties within the SA subpopulation (Watson & Kissinger, 2007), and may negatively impact life satisfaction and well-being (DeFreese & Smith, 2014; Giacobbi, Lynn, & Wetherington, 2004; NCAA, 2014; Watson & Kissinger, 2007).

In addition, the biopsychosocial stress and pressure experienced by SAs due to their academic workload combined with their sport-related time commitments can be problematic in regards to motivation, holistic well-being, and learning among other factors (Armstrong & Oomen-Early, 2009). Holistic wellness is vital to one's overall health because those in favorable health are able to utilize their utmost potential in situations that require self-motivation, responsibility and dedication (Rehman, Hussain, Syed & Common, 2014). Rehman et al. (2014) also stated that issues that negatively affect college students' wellness may include high academic, emotional and personal goals. Guided by the Self-Determination Theory, Ryan and Deci (2000a) examined how feelings of autonomy, competency, and relatedness can either enhance or diminish intrinsic motivation, well-being and the ability to self-regulate in individuals, thus, indicating a strong relationship between motivation and wellness in individuals.

Additionally, demographic and historical-based factors may also play a role in a SA's well-being and motivation. Issues such as sport type (e.g., coactive, interactive), sex differences, athletic scholarship status, transitions from the preparation season to the competitive season, first generation student status and so on have all been shown to have an impact. For example, research suggests that participation in collegiate sports and the acquisition of an athletic scholarship can

largely impact an athlete's motivation, self-esteem and athletic performance (Medic, Mack, Wilson & Starkes, 2007; Amorose & Horn, 2000). Yet, scholarship acquisition has been shown to reduce intrinsic motivation while placing more emphasis on extrinsic motivators such as pressure relating to increased performance expectations or to avoid negative consequences (Kingston, Horrocks, & Hanton, 2006; Martens & Webber, 2002).

In another study, it was found that female track and field athletes, regardless of scholarship status, demonstrated higher scores of intrinsic motivation than their male athlete counterparts as well as non-athletes (Cremades, Flournoy, & Gomez, 2012). Lightweis (2014) concluded that first generation college students experience a heightened level of issues during their college career such as facing financial and emotional challenges, difficulties in academic and social experiences, and a lack of knowledge about the college experience at the family level. Furthermore, past studies have showed that coactive versus interactive SAs perceive that they receive more autonomy support and individualized feedback from their coaches which supports higher levels of intrinsic motivation (Hollembeak & Amorose, 2005).

While the wellness-based SA literature available is often limited to SA services relating to psychological counseling, eating disorders/disordered eating, risky behaviors and stress coping (Nattiv, Puffer & Green, 1997; Waldron & Krane, 2005), research has shown that female SAs scored highest in exercise, friendship, and love and male SAs scored highest in exercise, sense of worth and friendship (LaFountaine, 2009). In another study, it was also found that male SAs who scored high in wellness (i.e., emotional, social, spiritual, intellectual, and physical) scored higher on coping skills associated with athletics that included coachability, concentration, goal setting/mental preparation, and peaking under pressure (Von Guenthner & Hammermeister, 2007).

However, too few of these studies relating to sport motivation and holistic wellness have targeted the NCAA Division II SA population with the most accessible research being focused on

elite athletes or Division I SAs. Without the availability of sport motivation and holistic wellness research involving Division II SAs, it not only presents a clear breach in the literature but also stifles the empirical capacity to explore comparisons between Division I and Division II as well as Division III SA populations.

1.2 Statement of the Problem

Presently, there remain gaps within the literature regarding the inter-relationships between psychosocial factors and demographic characteristics for collegiate SAs as a population relating to motivation and wellness. Specifically, empirical questions remain unanswered addressing how these factors affect perceptions and behaviors that relate to motivation shifts as well as holistic or multi-dimensional wellness within the collegiate SA population especially at the Division II level. While some pre to post season sport motivation research exists over two time points (Amorose & Horn, 2001; Boiche & Sarriazan, 2007; DeFreese & Smith, 2014; Gaudreau and Antl, 2008; Gillet, Berjot, & Gobance, 2009; Pelletier, Fortier, Vallerand, Tuson, Briere, & Blais, 1995; Readdy, Raabe, & Harding, 2014; Vallerand & Reid, 1984), there is little to no literature investigating collegiate SAs sources of sport motivation longitudinally (e.g., pre-season, in-season, off-season). Furthermore, very few studies have examined holistic well-being within the collegiate SA population (Miller & Kerr, 2002; Settles, Sellers, & Damas, 2002), thus, limiting the access and reliance upon which to pull from research relating to multi-dimensional wellness in SAs despite the aforementioned well-being complexities and challenges in the broader EA population which include SAs.

1.3 Purpose of the Study

The central purposes of this exploratory study were to examine differences in NCAA Division II SAs' sport motivation types longitudinally, and to understand differences between Division II SAs' demographic characteristics as it relates to multi-dimensional wellness. More specifically, this study was meant to establish baseline data and explore sport motivation over time as well as multi-dimensional wellness cross-sectionally in NCAA Division II SAs over the

course of one academic year. In addition, this study's intention was to provide foundational data focused on sport motivation over time and holistic wellness levels and to allow for future studies to focus on comparisons between SAs and control groups (e.g., non-SAs) as well as comparisons of Division I, II and III as well as NAIA SAs to investigate potential differences in motivation, multi-dimensional wellness and additional psychosocial factors.

1.4 Significance of the Study

In 2000, Arnett proposed a new conceptual development stage called "emerging adulthood" where he stated that this stage is "a distinct period demographically, subjectively, and in terms of identity explorations" and is characterized by change, exploration and instability in individuals of ages from 18 to 25 (p.469). In relative terms, SAs are also a part of the greater EA population and bear with them similar adjustments to college as they begin a deeper self-discovery process through personal, professional and athletic development. In addition, the review of literature as discussed in Chapter 2 supports the notion that SAs' motivation and wellness are further impacted due to having an additional dimension or "layer" added to their identity and psychosocial development process beyond the typical college-aged student. Ultimately, the study outcomes and conclusions will provide a deeper, more comprehensive and empirically-based perspective of NCAA Division II SAs, specifically, as it relates to motivational and well-being factors of SAs as well as to afford a programmatic foundation to coaches, parents, athletic administration, educators and student affairs personnel.

1.5 Research Aims

1. To examine changes in six sport motivation types over three time points (pre-season, in-season, off-season) in SAs and investigate differences for team type (coactive, interactive) and for athletes' reported sex (male, female).
2. To assess for differences in nine multi-dimensional wellness dimensions between athletes' reported sex (male, female) and between SAs who have completed a multi-dimensional wellness course versus those SAs who have not.

1.6 Hypotheses

1. Research Aim 1

   Research Hypothesis 1a: There are statistically significant differences in sport motivation types in the collective SA sample over time (i.e., pre-season, in-season, off-season).

   Research Hypothesis 1b: There are statistically significant interactions in sport motivation types between coactive and interactive sport-based SAs over time (i.e., pre-season, in-season, off-season).

   Research Hypothesis 1c: There are statistically significant interactions in sport motivation types between male and female SAs for the over time (i.e., pre-season, in-season, off-season).

2. Research Aim 2

   Research Hypothesis 2a: There are statistically significant interactions in wellness dimensions between male and female SAs and those who completed a college multi-dimensional wellness course versus SAs who have not.

   Research Hypothesis 2b: There are no statistically significant differences in multi-dimensional wellness levels between male and female SAs.

   Research Hypothesis 2c: There are statistically significant differences between SAs who completed a college multi-dimensional wellness course versus SAs who have not.

1.7 Theoretical Framework

In order to provide a structural foundation upon which this study was based, the use of the empirically-based, Self-Determination Theory (SDT), was utilized to further investigate sport motivation and multi-dimensional wellness in SAs. The SDT is a psychological macrotheory of motivation, wellness and development in humans concentrating on sources or types of motivation versus solely the amount of motivation (Deci & Ryan, 1985; Ryan & Deci, 2000a). The SDT consists of six total motivation types (i.e., intrinsic motivation, integrated regulation, identified regulation, introjected regulation, external regulation, and amotivation) which have been

confirmed through sound research as predictors of "many important outcomes such as psychological health and well-being, effective performance, creative problem solving, and deep or conceptual learning" (Deci & Ryan, 2008, p.182).

While copious wellness models are currently available within the literature, the model that was used in this study is a refined form of Adams, Bezner and Steinhardt's (1997, 2000) six-dimensions of perceived wellness model along with Hettler's (1976, 1980) six-dimensional interdependent wellness model. The model used in this study is multi-dimensional in nature and inclusive of nine total dimensions of wellness (i.e., physical-exercise, physical-nutrition, mental, social, spiritual, intellectual, environmental, occupational, and financial) (Mayol, 2012). Chapter 2 provides a review of literature including a review of college SAs and their complexities and challenges, the Self-Determination Theory and its constructs, holistic or multi-dimensional wellness and its associated constructs, and empirical findings related to motivation in sport as well as well-being.

1.8 Research Design

Using convenience sampling, study participants included both male and female SAs recruited from 21 NCAA Division II athletic teams from the University of Indianapolis, a small, private Midwestern university. Participants were asked to voluntarily complete three self-report questionnaires including a demographics/historical questionnaire, all of which were paper-based in nature. In order to answer the study's research aims regarding types of sport motivation over time, a longitudinal research design was employed to examine motivation in sport over three time points (e.g., pre-season, in-season, off-season) investigating comparisons among team and individual sport-based SAs as well as male and female SAs. The 18-item Sport Motivation Scale II (SMS II) (Pelletier, Rocchi, Vallerand, Deci & Ryan, 2013) was used to measure the six different sources of sport motivation over the three stated time points in this sample of SAs.

Additionally, a cross-sectional research design was utilized to assess multi-dimensional wellness levels among male and female SAs in this sample via nine wellness constructs using the

45-item Multi-Dimensional Wellness Inventory (MDWI) (Mayol, Schreiber, & Scott, 2017; Scott, Mayol, & Schreiber, 2013). MDWI data was collected only during the first collection time point with each SA team. In addition, a quasi-experimental design was used to assess differences in nine wellness dimensions using the MDWI between SAs who have previously completed a 15-week college-level multi-dimensional wellness course offered at this institution versus those who have not yet completed this course. Chapter 3 provides a background of the study's methodology encompassing a description of the sample of participants, measures, procedures including information on data collection, and the various data analyses planned for use in this study. Chapter 4 provides the results from the analyses of data. Chapter 5 provides a robust discussion of the study's findings.

1.9 Delimitations

This study's delimitations included:

1. A power analysis was completed in order to ensure the probability of not committing a Type II error or accepting the null hypothesis when it is in fact false.
2. In order to study a sample of NCAA Division II SAs, those SAs attending the University of Indianapolis located in Indianapolis, Indiana, and participating on the men's football, women's volleyball, men's and women's swimming and diving, men's and women's soccer, men's and women's cross country, men's and women's basketball, men's wrestling, women's softball, men's baseball, men's and women's tennis, men's and women's golf, men's and women's track & field and men's and women's lacrosse teams were recruited for this study.
3. The sport motivation data were collected via the SMS II at three separate time points throughout the academic year during the team's respective athletic season (pre-season, in-season and off-season).
4. The multi-dimensional wellness data were collected via the MDWI at one time point at the beginning of the academic year.

5. The demographics/historical data were collected via a demographics/historical questionnaire at one time point at the beginning of the academic year.
6. Data collection time points were scheduled during the academic year versus over school breaks (e.g., summer break, fall break, winter break, spring break) in order to ensure SA participant availability to safeguard sample size requirements.
7. All data collection meetings were conducted in person using paper-pencil survey-based methods versus via an email or online format.
8. Data collection will be completed along with the SAs' respective teammates but without coaches or other athletic staff present in the meeting room in order to reduce the possibility of a social desirability bias or providing socially acceptable answers in order to avoid embarrassment or please the coaches or athletic staff.
9. The SMS II and the MDWI were put into a random order within the survey packets to decrease the possibility for survey fatigue or answer abandonment.
10. The demographics/historical questionnaire was placed at the end of each survey packet to reduce stereotype threat which has been proven to impact how participants answered survey questions if they are reminded of a stereotyped attribute or demographic characteristic ahead of the answering the survey items on specific measures (e.g., SMS II and MDWI).

1.10 Assumptions

The following assumptions of this study included:

1. SA participants who voluntarily chose to participate in this study were doing so out of interest due to the nature of research being conducted.
2. SA participants were expected to answer the survey questions truthfully, accurately and to their best ability during each of the three data collection time points.
3. SA participants were able to interpret and comprehend what the survey questions are asking of them.

4. The SMS II and MDWI questionnaires used in this study were measuring what their intended purpose is to measure (e.g., six types of sport motivation, nine dimensions of wellness).

1.11 Limitations

The following limitations of this study included:

1. The SMS II, the MDWI and the demographics/historical questionnaires are self-report in nature.
2. SA participants may answer the survey items dishonestly due to a social desirability bias or to avoid embarrassment or please the researcher who they understand will see their answers impacting the survey data quality.
3. A shortage of empirical data to support the study's hypotheses may not allow for comparisons of results to previous studies.
4. SA participants available during the first or second data collection time point may voluntarily discontinue participating in the research study, thus, data will not be collected on all three time points as planned impacting sample size and causing an interruption of data collected.
5. SA participants who are deselected from their respective team or who have voluntarily discontinued their involvement in their sport will not be able to participate in the study, thus, data collected on all three time points will be interrupted and will impact sample size.
6. Participants will be recruited from only one NCAA Division II institution which may interfere with results not being generalizable beyond this sample.

1.12 Operational Definitions and Abbreviations

The following terms and definitions will be in this study:

Amotivation or Amotivated regulation (AMR):

This is the least self-determined and least sustainable type of motivation, is positioned on the opposite end of the self-determination motivation continuum from the intrinsic motivation type marking an absence of motivation as it relates to competence, autonomy, relatedness and control (Deci & Ryan, 1985, 2000, 2002).

Coactive athletes:

These are individuals who compete in sport that requires them to perform side by side with little to no interaction (e.g. cross country, tennis) (Weinberg & Gould, 2014).

Emerging adult (EA or EAs):

These are individuals, ages from 18 to 25, who are in a newly founded lifespan development period called "emerging adulthood" where this is an age of identity exploration, instability, possibilities, self-focus, and of feeling in between (Arnett, 2000, 2004).

Environmental wellness (EW):

This is one's awareness of and engagement in acts of environmental sustainability and the upkeep of environmental quality measures including access to clean air, nutritious food, sanitary water, adequate clothing, and safe environment within one's community (Mayol, 2012).

External motivation (EXT):

This is one of four forms of extrinsic motivation or regulation where rewards and punishments direct behavior and is a controlled versus an autonomous type of motivation positioned closest to the amotivation type on the sport motivation continuum making it a lesser self-determined and sustainable motivation type (Deci & Ryan, 1985, 2000, 2002).

Financial wellness (FW):

This is one's awareness of one's financial situation and stability as it relates to financial management and responsibility (Mayol, 2012).

Identified motivation or regulation (IDR):

This is one of four forms of extrinsic motivation or regulation where perceived autonomy, personal commitment and engagement are of importance and value and, therefore, direct behavior. This is a moderately autonomous type of motivation positioned in the middle of the sport motivation continuum making it a self-determined motivation type (Deci & Ryan, 1985, 2000, 2002).

Intellectual wellness (IW):

This is one's awareness and engagement in creative and mentally stimulating thoughts and activities (Mayol, 2012).

Interactive athletes:

These are individuals who compete in sport that requires them to work together and coordinate their actions (e.g. soccer, basketball) (Weinberg & Gould, 2014).

Intrinsic motivation or regulation (IR):

This is the most self-determined, autonomous and sustainable type of motivation or regulation, and is positioned on one end of the continuum furthest from the amotivation type where competence, autonomy and relatedness as well as internal satisfaction, mastery and enjoyment in a particular task or activity have been reached (Deci & Ryan, 1985, 2000, 2002).

Integrated motivation or regulation (INTM):

This is one of four forms of extrinsic motivation or regulation where congruency between and individual's and an organization or team's goals, values, and regulations are congruent directing behavior. This is a self-determined, autonomous type of motivation positioned closest to the intrinsic motivation type on the sport motivation continuum (Deci & Ryan, 1985, 2000, 2002).

Internalization:

This is the mechanism of the transformation of an externally regulated motive into an internally regulated motive and where assimilation occurs on the sport motivation continuum (Deci & Ryan, 1985, 2000, 2002).

Introjected motivation or regulation (INTR):

This is one of four forms of extrinsic motivation or regulation where feelings of guilt, anxiety, and shame direct behavior and interfere with performance-based self-esteem. This is a moderately controlled type of motivation positioned in the middle of the sport motivation continuum, yet, is considered a lesser self-determined and sustainable motivation type (Deci & Ryan, 1985, 2000, 2002).

Mental wellness (MW):

This is one's awareness and engagement in how one's appraises and copes with stressors and is the degree to which one thinks, feels and behaves in life and in work (Mayol, 2012).

Motivation:

This is defined as the direction of effort (whether an individual seeks out, approaches, or is attracted to situations) and intensity of effort (how much effort an individual puts forth in a situation) and is a process that influences the initiation, direction, magnitude, perseverance, continuation and quality of goal-directed behavior (Sage, 1978; Maehr and Zusho, 2009; Weiss & Ferrer Caja, 2002).

Multi-dimensional wellness:

This is defined as a holistic, self-driven process focusing on self-reflection and self-responsibility through one's discovery of physical, mental, social, spiritual, intellectual, environmental, occupational and financial wellness, including how each interconnects with one another in a balanced or unbalanced state (Mayol, 2012).

Occupational wellness (OW):

This is one's awareness and engagement in recognizing personal satisfaction, meaning and enrichment through understanding roles and responsibilities as it relates to a career and vocation, determining work/life balance and utilizing strengths, values and interests in the workplace (Mayol, 2012).

Physical wellness- exercise (PWE):

This is one's awareness and engagement in recognizing the need for regular physical activity for the prevention of chronic disease states and for the promotion of the many other physiological and psychological benefits of exercise (Mayol, 2012).

Physical wellness- nutrition (PWN):

This is one's awareness and engagement in learning about daily dietary habits and overall nutrition needs and necessities to make for a healthy lifestyle as well as the prevention of chronic disease states (Mayol, 2012).

Self-regulation:

This refers to the volitional and internalized process of enjoyment, engagement and persistence of activities by effectively monitoring, managing and modifying one's thoughts, feelings, and behaviors further enhancing one's performance, well-being, creativity and motivation (Deci & Ryan, 1985, 1991).

Social wellness (SW):

This is one's awareness and engagement in communication, attitude, civility, personal relationships and contributions made to one's surroundings, community and society (Mayol, 2012).

Spiritual wellness (SPW):

This is one's awareness and engagement in one's search for meaning and purpose in human existence through a deep appreciation for the depth of life, a sense of inner peace, overall satisfaction and confidence involving ethics, values beliefs and morals (Mayol, 2012).

Sport motivation:

This refers to the notion that humans possess greater self-regulation in sport or activity through higher levels of competence, relatedness and autonomy, thus, influencing sport performance per the Self-Determination Theory (Deci & Ryan, 1985; Pelletier et al., 2013).

Student-athlete (SA or SAs):

In the collegiate model, this refers to an individual who is enrolled at a higher education institution (student first) who also participates in competitive sport sponsored by the educational institution (athlete next) (NCAA, 2016).

CHAPTER TWO: REVIEW OF LITERATURE

2.1 Review of Literature Introduction

The purposes of the study along with the study's introductory components were presented in Chapter 1. Chapter 2 serves to present an extensive review of literature as it relates to historical, theoretical, relevant and empirical contexts within sport motivation and multi-dimensional wellness in the collegiate student-athlete (SA) population. First, the emerging adult (EA) and collegiate SA will be defined along with a review of challenges and complexities associated with the EA population and SA subpopulation. Next, an overview of human motivation and sport motivation literature is given to introduce the utility of the Self-Determination Theory in this study in order to examine sport motivation in SAs. Lastly, wellness as it has been studied in the collegiate SAs will be examined and the multi-dimensional wellness model will be further defined and discussed.

2.2 Emerging Adults in the College Setting

The United States of America currently services the most diverse college student population of all the higher education systems worldwide where institutions work to provide a range of academic and campus-related programs and opportunities for their ever-growing student population including but not limited to academic support, psychological support, diversity and inclusion initiatives, athletic and recreational programs, and service and volunteerism ventures and projects. Roughly 20 million students are attending American colleges and universities as of the 2015 academic year and an increase in college enrollments by approximately 5.2 million students was seen since 2010 (National Center for Educational Statistics, 2016). With increases in the typical, college-aged student population (also known as the emerging adult [EA] population) and increase in enrollment rates (National Center for Educational Statistics, 2016), the EA population is becoming of larger interest to researchers, educators and administrators involved directly and indirectly with higher education.

In 2000, Arnett coined the term, “Emerging Adulthood,” which was proposed as a new lifespan developmental period ranging from the late teens (starting at 18 years of age, respectively) through the mid-twenties (ending at 25 years of age, respectively). Arnett (2000) postulated that EA was different from and not the same as other lifespan periods or terms such as late adolescence, post adolescence, young adulthood or transition to adulthood and can be distinguished demographically, subjectively and psychologically per the five-factor, explorative process with one’s identity. As stated by Arnett (2015), EAs have been known to perceive themselves in a state of mutability between adolescence, post adolescence, young adulthood and the transition to adulthood and has been described as including “identity exploration, feeling ‘in-between,’ instability, self-focus and possibilities/optimism” (Tanner & Arnett, 2009, p. 39).

Yet, it is also important to note that this lifespan period has not been demographically represented on a worldwide front but is mostly experienced in industrialized or post-industrialized countries such as the United States (Arnett, 2000, 2015). Arnett (2015) described this difference especially in the American culture due to furthered and more widespread educational opportunities, individuals delaying marriage or parenthood compared to decades past, and a lengthier and unpredictable time frame regarding work permanency.

According to Arnett (2015), identity exploration, the most distinctive of the five facets of EA in the American societal context, has been explained as one discovering choices and preferences for life, love and work as well as elucidating the person they are, the person they want to be and their life expectations and expectancies. Instability, a second EA factor, has been described as housing a high frequency of shifting of ideas and plans about school, work and love where one begins to learn through these revisions and change of plans about their desired future. A third facet of EA, self-focus, has not been characterized by the notion of selfishness but the notion of developing a sense of self through skills learned through daily living in school, work, play and love where one embarks on acquiring a level of self-sufficiency. Feeling ‘in-between’, a fourth component of EA, has been referred to as a perceived flux between associating one’s self

with adolescence or with young adulthood and has been correlated with three criteria for becoming an adult (being self-responsible, being an independent decision-maker and being financially independent). The fifth EA factor, possibilities/optimism, has been labeled as such because it characterizes opportunities for EAs to become transformed and to flourish (Arnett, 2015).

Grob, Krings, and Bangerter (2001) suggested that lifespan development studies defer to EA as one of the most significant points in time where role transitions and life marker events (or personal development turning points) are, in all likelihood, going to transpire and will do so less linearly but more so via a shifting of roles and responsibilities either through progression or regression. Grob et al. (2001) also indicated that these life marker events become more assimilated into an EA's identity, working memory and long-term memory versus when life marker events take place during younger or older periods of life.

Moreover, Tanner (2006) stated that the EA lifespan developmental period is a pivotal point in human life development where a psychosocial task-based phenomenon called "recentering" occurs complementing the EA process. Recentering has been defined as "the interdependence of development and considers the individual-in-context with the unit of analysis that is changing over time" via three transitional stages that account for shifts in roles, relationships, commitments and responsibilities (Tanner, 2006, p. 22).

In addition, it was also found that life marker events such as residential, financial, relationship, family formations and independence were salient factors for EAs ages 17 to 27 years (Cohen, Kasen, Chen, Hartmark, & Gordon, 2003) and were considered interdependent on one another (Sneed, Hamagami, McArdle, Cohen, & Chen, 2007). However, the most pronounced psychosocial tasks and goals identified and selected by EAs have been shown to be related to friendships, relationships, family, academics, career, and health goals (Salmela-Aro, Aunola, & Nurmi, 2007; Tanner & Arnett, 2009).

2.2.1 Emerging Adults: Transitions, Adjustments, Stressors and Risk Factors

Matriculation into college has presented EAs several opportunities for learning and for personal and social experiences as well as increases in academic demands and tighter time constraints that have been known to impact psychosocial development (Tao, Dong, Pratt, Hunsberger, & Pancer, 2000). First-year transitions to college have been found to be an influencing factor within the EA college-goer population as seen in increased levels of psychosocial distress that includes difficulties with adjustments to college life (e.g., feeling lonely, interpersonal conflicts with professors and friends, feeling homesick, time management, finances, etc.) (American College Health Association [ACHA], 2015; Dusselier, Dunn, Wang, Shelley, & Whalen, 2005).

Previous studies showed that EAs attending college indicated having a high level of stress (ACHA, 2015) making this at-risk population prone to less than desirable academic performance (Akgun & Ciarrochi, 2003; Dwyer & Cummings, 2001; Pritchard & Wilson, 2003) and more vulnerable to the continuation of increased psychosocial stress with the potential to manifest into stress-related mental health issues, nonfatal/self-inflicted injuries and suicide (Conley, Travers & Bryant, 2013; Dyson & Rank, 2006; Eisenberg, Gollust, Golberstein, & Hefner, 2007). In addition, college students seeking mental health services has increased over the years as indicated by the number of visits to college-based counseling centers (Deroma, Leach, & Leverett, 2009; Friedlander, Reid, Shupak, & Cribbie, 2007; Hardy, Weatherford, Locke, DePalma, & D'Iuso, 2011).

Furthermore, increases in stress levels, rising rates of depression and manifestations into mental health challenges in the EA college population have demonstrated negative impacts on well-being, self-esteem (Friedlander et al., 2007) and persistence through college (Deroma et al., 2009; Friedlander et al, 2007). According to Tinto (1975), persistence refers to social and academic integration of a student at a particular institution which is influenced by academic performance (e.g., GPA, course load and credits earned, academic self-discipline), attitudes and

fulfillment (e.g., positive orientation toward and commitment of academics, sense of belonging and connecting with other socially), academic engagement (e.g., academic and campus-related involvement) and social support (e.g., family, faculty/staff, sense of community and importance).

Pascarella and Terenzini (2005) found that students are more likely to persist in their college pursuits and graduate if they are socially and academically integrated with their college campuses versus those who are not. Additionally, college students find that they perform better and are more personally satisfied when they feel their institution provides a supportive and cultivating campus environment committed to their ultimate success (National Survey of Student Engagement, 2012).

Moreover, alcohol abuse including binge drinking and heavy alcohol consumption in EAs has remained a looming public health concern for university campuses nationwide. Conclusions drawn from the Substance Abuse and Mental Health Services Administration's (2014) (SAMSHA) National Survey on Drug Use and Health's 2013 Summary of National Findings report is that the prevalence of 18 to 22 year-old binge drinkers and heavy users of alcohol has remained the same from 2002 to present day for college students in comparison to others. More specifically, a distinct prevalence was seen of current drinkers (55%), binge drinkers (39%) and heavy users of alcohol (13%) among full-time college students versus current drinkers (51%), binge drinkers (33%) and heavy users (9%) who were not full-time students or who were not enrolled in college (SAMSHA, 2014).

While 50% of EAs participated in binge drinking before they began college, it was found that a like amount of students began engaging in binge drinking during their first year of college (Wechsler & Nelson, 2008). One-fourth of college students were presented as lagging behind their peers because of missed classes and underperformance on exams due to such alcohol abuse (National Institute on Alcohol Abuse and Alcoholism, n.d., para.4). In addition, Fromme, Corbin and Kruse (2008) found that the transition from high school years to college years resulted in an increased use of alcohol, marijuana and several sexual partners. Moorer, Madson, Mohn, and

Nicholson (2014) concluded that alcohol consumption among EAs led to an increase in risky sexual behaviors while controlling for race.

2.3 Collegiate Student-Athletes as Emerging Adults: Living Dual Roles

Intercollegiate athletics in the United States has become firmly embedded in the American sports culture as one of its main pillars and is presently a staple on most U.S. college campuses in various levels and forms. Approximately 460,000 college SAs compete in 24 sports each year within NCAA Division I, II or III levels at over 1,000 colleges and universities within the United States as reported by the National Collegiate Athletics Association (NCAA) (2016a). Roughly, 56% of SAs in all NCAA participating institutions and divisions are males with the remaining 44% proportion being females (NCAA, 2015).

In NCAA Division I athletics, there are approximately 170,000 college SAs competing on an athletic team at their institution (NCAA, 2016b). In NCAA Division II athletics, there are approximately 119,000 college SAs competing on an athletic team at their institution (NCAA, 2016c). In NCAA Division III athletics, there are approximately 191,000 college SAs competing on an athletic team at their institution (NCAA, 2016d). In addition, the National Association of Intercollegiate Athletics (NAIA), a separate entity than the NCAA, reported that more than 60,000 male and female SAs compete in 13 sports at 300 NAIA member institutions (2016). See Table 2.1 on the following page for divisional differences and criteria for NCAA Division I, II and III athletics.

Additionally, the NCAA (2016e) states that Division II athletic programs typically include a fair number of local or in-state SAs where a majority of SAs pay college tuition costs through a blend of scholarships, grants, student loans, and outside employment. Athletic programs within participating Division II institutions conduct their fiscal responsibilities similar to that of academic-based departments (2016e). Lastly, the NCAA describes Division II athletic programs as having more traditional-based rivalries within their respective conferences or due to locale typically dictates the majority of competition/game schedules (NCAA, 2016e).

Table 2.1

NCAA Classification Criteria for Division I, II and III

Division I	• Must sponsor at least seven sports for men and seven for women (or six for men and eight for women) with two team sports for each gender • Each playing season must be represented by each gender • Other than football and basketball, Division I schools must play 100 percent of the minimum number of contests against Division I opponents (anything over the minimum number of games has to be 50 percent Division I) • Men's and women's basketball teams must play all but two games against Division I teams; for men, they must play one-third of all their contests in the home arena • Football is classified as Football Bowl Subdivision (formerly Division I-A) or NCAA Football Championship Subdivision (formerly Division I-AA) o Football Bowl Subdivision teams: must meet minimum attendance requirements (average 15,000 people in actual or paid attendance per home game); must be met once in a rolling two-year period o NCAA Football Championship Subdivision teams do not need to meet minimum attendance requirements • Division I schools must meet minimum financial aid awards for their athletics program; there are maximum financial aid awards for each sport that a Division I school cannot exceed
Division II	• Must sponsor at least five sports for men and five for women, (or four for men and six for women), with two team sports for each gender, and each playing season represented by each gender • Football and men's and women's basketball teams must play at least 50 percent of their games against Division II or Football Bowl Subdivision (formerly Division I-A) or Football Championship Subdivision (formerly Division I-AA) opponents • There are not attendance requirements for football, or arena game requirements for basketball • There are maximum financial aid awards for each sport that a Division II school must not exceed
Division III	• Must sponsor at least five sports for men and five for women, with two team sports for each gender, and each playing season represented by each gender • There are minimum contest and participant minimums for each sport

Based on the NCAA's Divisional Differences and the History of Multidivision Classification (NCAA, 2016e)

The term, student-athlete (SA) has been defined as "an individual who engages in, is eligible to engage in, or may be eligible in the future to engage in, any intercollegiate sport" according to the United States House of Representatives (USHR), Office of the Law Revision Counsel, United States Code, Sports Agent Responsibility and Trust Act [15 USCS § 7801 (9) Title 15. Commerce and Trade; Chapter 104; Pub. L. 108–304, §2, Sept. 24, 2004, 118 Stat. 1125] (USHR, 2016, para. 1). The definition used by the NCAA (2016a) states that an SA is "a student who, as of the day of the varsity team's first scheduled contest: (a) is listed as a team

member; (b) practices with the varsity team and receives coaching from one or more varsity coaches; or (c) received athletically related student aid" (para. 2).

However, it is essential that SAs, be recognized as being part of the greater EA population as they encounter paralleled transitions, psychosocial stresses, and protective and risk factors as to non-athlete EAs which have been known to shape one's definitive role and role clarity, identity exploration and performance outcomes. Yet, the dual role of being a collegiate SA and EA has proven both advantageous and non-advantageous for the SA population as mentioned in the extant literature.

Understanding potential risk factors and protective factors that have been proven to positively or negatively affect levels of motivation, stress and well-bring for SAs is summarized in the forthcoming sections. Risk factors are associated with personal, social or environmental factors that increase the likelihood that an individual will encounter a problematic outcome while protective factors increase the likelihood of that individual will experience a favorable outcome (Community Toolbox, 2014, para. 4). Personal and social factors relate to the level of knowledge, skill, history, experience, biological/genetic predispositions while environmental factors relate to support, resources, access, consequences of efforts, policies and living conditions (Community Toolbox, 2014, para. 13-14).

2.3.1 Collegiate Student-Athletes: Protective Factors

Participating in collegiate athletics has afforded many SAs several supplementary benefits and protective factors as it relates to social and academic support and resources as well opportunities for disadvantaged SAs which has been shown to positively influence self-esteem, well-being, academic success and persistence, intrinsic motivation, camaraderie, high commitment in sport goals, inclusion, racial/ethnic tolerance and cultural ideals, and developing adaptive self-regulation behaviors and methods of self-expression in non-athletic settings (Brown, Brown, Jackson, Sellers, & Manuel, 2003; Horton & Mack, 2000; Sylwester & Witosky, 2004; Wrosch, Scheier, Miller, Carver, & Schulz, 2003; Pascarella, Edison, Hagedorn, Nora, &

Terenzini, 1996). Pascarella and Terenzini (2005) also found that collegiate SAs demonstrated higher scores on learning measures than their non-athlete peers.

Research has indicated that over 70% of SAs are highly active and engaged inside the classroom as well as outside of the classroom (e.g., research or service with faculty or classmates, completing an internship or senior capstone, community service) which has benefitted SAs socially and positively impacted their perceived level of cultural competence (Kuh, Kinzie, Buckley, Bridges, & Hayek, 2006; NCAA, 2008). Moreover, most collegiate SAs felt that they had adequate access to academic, advising and athletic support services as well as used these services as needed (Kuh, Kinzie, Buckley, Bridges, & Hayek, 2006; NCAA, 2008). Previous studies have consistently shown that junior and senior-level SAs begin to reprioritize their time and their roles (e.g., from athlete to student) as graduation becomes imminent and the occupational focus sharpens (Adler & Adler, 1987; Lally & Kerr, 2005; Miller & Kerr, 2003).

Studies also suggested that some of the rewards of sport participation included overall physical health, psychological enhancement, increased mental well-being, positive self-concept, and social improvements (Santrock, 2003). Armstrong, Burcin, Bjerke, and Early (2015) found that SAs could be protected from depression since their lifestyle revolve around consistent levels of moderate to vigorous physical activity and more frequent social support and connectedness leading to opportunities for increased intrinsic motivation and self-esteem. Previous studies showed that further protective factors included having higher levels of social connectedness was found to be positively correlated with higher levels of self-esteem in both male and female athletes where both SA sexes experienced higher social connectedness altogether than their non-athlete peers (Armstrong & Oomen-Early, 2009). Bianco and Eklund (2001) indicated that SAs who were involved in socialization structures that were intended to provide conducive, social support resources and to generate positive outcomes lead to overall positive experiences for the SA.

Teammate social support has been positively associated with lesser incidences of burnout as well as adaptive forms of coping and motivation (DeFreese & Smith, 2013). Bohnert, Aikins, and Edinin (2007) indicated that SAs demonstrated lower rates of loneliness and difficulties with socialization aiding in transitions to college. Furthermore, coaches and coaching methods played a large role in the development of athletes' psychological function and skill level in sport to enhance the effectiveness of performance (Shen, Garn, McCaughtry, Martin, & Fahlman, 2013). According to an NCAA study in 2008, SAs responded that they were more likely to "choose their current institution again if they believed their coach had a positive impact on their academic career and was not negatively influencing choice of major, classes, or the ability to participate in other extracurricular activities" (p.21).

2.3.2 Collegiate Student-Athletes: Risk Factors

While several protective factors have been shown to exist for SAs, it has been noted in the literature that additional transitions, biopsychosocial stresses and risk factors exist specifically for SAs due to demands and conflicts of balancing the dual roles of being a student and an athlete. In the "Student-Athlete Perspective of the College Experience" report compiled by the NCAA (2008), it stated the most SAs identified with being an athlete more than a student which has been known to undermine social and developmental experiences as well as a positive transitioning out of college. In addition, over-identifying with the athlete role versus the student role in collegiate SAs has led to a decrease in time spent on academics hosting an unbalanced approach to both academics and athletics (Lally & Kerr, 2005; Miller & Kerr, 2003; Quarforth, Brewer, Petitpas, Champagne, & Cornelius, 2003).

DeFreese and Smith (2014) argued that college matriculation, engagement in an athletic program plus the additional pressures SAs face can present a number of negatively associated impacts on SAs. SAs have been recognized as being subject to varying amounts of internal and external pressure and scrutiny about their athletic and/or academic performance from a wide variety of sources while feeling conflicted between their student and athlete roles and can

manifest into a host of negative health and well-being outcomes (Giacobbi, Lynn, & Wetherington, 2004). These added stressors of SAs have been demonstrated to express themselves into physical, cognitive-affective, and/or developmental difficulties according to Watson and Kissinger (2007).

Research has suggested that these difficulties include negative impacts on satisfaction, motivation and well-being due to role interference between being a student and an athlete, possessing a primary, athletic-driven identity, frequency and duration of time participating in sport (practices, competitions, travel), burnout, overtraining, negative social interactions, performance anxiety, injury rehabilitation, balancing academic workload and athletic commitments, alcohol and substance use and abuse, depression, inability to socialize outside of athletics with non-SAs, eating disorders or disordered eating behaviors, lower self-efficacy for career decision-making tasks, neglecting developmental activities that lead to personal competence (e.g., studying, social and academic integration activities) and lack of social support (Armstrong & Oomen-Early, 2009; Brown, Glastetter-Fender, & Shelton, 2000; Cresswell, 2009; DeFreese & Smith, 2014; Dyson & Rank, 2006; Eklund & Cresswell, 2007; Giacobbi, Lynn, & Wetherington, 2004; Hammond, Gialloreto, Kubas, & Davis, 2013; Horton & Mack, 2000; NCAA, 2014; Person, Benson-Quaziena, & Rogers, 2001; Petitpas & Buntrock, 1995; Raglin & Hanin, 2000; Rozmus, Wysochansky & Mixon, 2005; Settles, Sellers & Dumas, 2002; Watson & Kissinger, 2007).

Social norms have been influential in bringing about the assumption that participating in athletics promotes the adoption of healthy lifestyles and the deterrence of engaging in risky health-related behaviors that could have detrimental effects on performance and health. However, past research has indicated a complex relationship between athletic involvement and physical and psychological health-related risk factors and behaviors especially at the college level (Eitle, Turner, & Eitle, 2003; Watson & Kissinger, 2007). SAs needing to balance both athletic and academic demands have been identified as being at risk for problems associated with a lack of

sleep, fatigue, anxiety, depression and other negative health habits (Hammond et al., 2013; Hudd et al., 2000; Humphrey, Yow, & Bowden, 2000). Previous studies have shown a significant differences between team-based SAs versus individual-based SAs in substance use and abuse prevalences (Rockafellow & Saules, 2006; Weschler, Davenport, Dowdall, Grossman, & Zanakos, 1997) as well as SAs who were extrinsically motivated versus intrinsically motivated (Martens, Cox, & Beck, 2003; Rockafellow & Saules, 2006; Weschler, Davenport, Dowdall, Grossman, & Zanakos, 1997).

Athletic time commitments that outweighed personal time or downtime showed SAs feeling burned out and/or resentful of their coaches, athletic director and student support or affairs administrators (NCAA, 2008). Pressures to succeed in one's sport has been known to involve excessive time and effort spent performing physical training which has been associated with SA overtraining due to the high loads of intense training without adequate recovery (Meeusen, Duclos, Foster, Fry, Gleeson, Nieman, & Urhausen, 2013) leading to training distress accompanied by mood disturbances (Kenttä, Hassmén, & Raglin, 2001). Proctor and Boan-Lenzo (2010) indicated that because of the stress of living the EA and SA duals roles and coping with additional academic, sport or injury-related stressors places SAs at risk for developing depression symptoms.

In addition, social interactions that were negatively perceived by SAs as insensitive, intrusive, neglecting or rejecting were associated with less than favorable SA social support levels and SA burnout, thus, negatively impacting athlete motivation, the athletic environment, and the athletic experience (Cresswell, 2009; Goodger, Gorely, Lavallee, & Harwood, 2007; Newsom, Rook, Nishishiba, Sorkin & Mahan, 2005; Raedeke & Smith, 2004). Becoming injured has been associated with increased depression and anxiety symptoms in SAs and negative affect such as anger, detriment in self-esteem and motivation and a loss of bonding with teammates due to feelings of seclusion due to injury rehabilitation (Yang, Peek-Asa, Corlette, Cheng, Foster, & Albright, 2007). Furthermore, being deselected or dismissed from an athletic team (e.g.,

compliance issues) has also been associated with increased stress levels for those SAs who also must deal with the post-situation aftermath causing high stress load and stifled motivation for those SAs who remain and must go on to compete (Zuk, 2004). Therefore, the extant literature garnered on the biopsychosocial effects of the duality of the SA/EA realities and livelihoods brings about further inquiries suggestive of concerns that lie with motivation and wellness domains for this population of athletes.

2.4. Human Motivation: Background

According to the American Psychological Association (2016), motivation has been defined as the "process of starting, directing, and maintaining physical and psychological activities; includes mechanisms involved in preferences for one activity over another and the vigor and persistence of responses" (para. 23). Weiss and Ferrer Caja (2002) and Sage (1978) both discussed motivation as the direction of effort (whether an individual seeks out, approaches, or is attracted to situations) and intensity of effort (how much effort an individual puts forth in a situation). In addition, motivation has been explained by Maehr and Zusho (2009) as more of a process than a construct where motivation is defined as the "process that influences the initiation, direction, magnitude, perseverance, continuation and quality of goal-directed behavior" (p. 77). With at least 32 motivational theories known to exist (Ford, 1992), it is also known that these theories are accompanied by their own definitions.

Beginning in the early 20th century and continuing through the mid-century, motivation in humans was studied from a mixture of mechanistic and cognitive perspectives as seen in previous research using Sigmund Freud's psychoanalytic theory in the early 1900's, operant conditioning (Skinner, 1938), the field theory (Lewin, 1939) or the drive theory (Hull, 1943) where mechanistic motivation behavior was considered contingent upon a stimulus-response relationship to restore homeostasis with humans being passive in the process and cognitive motivation behavior that included many factors that played a role such as perceptions, goals, interests, values, and choices (Weiner, 1989). During the mid-20th century, the cognitive,

organismic, and deterministic motivation theories came into their own housing theories such as hierarchy of needs motivation theory (Maslow, 1943), achievement motivation (McClelland, Atkinson, Clark, & Lowell, 1953; Nicholls, 1989), social learning theory (Bandura 1963; 1977), social cognitive theory (Bandura, 1986), attribution theory (Weiner, 1986), self-determination theory (Deci & Ryan, 1985), dualistic model of passion (Vallerand & Houlfert, 2003; Vallerand, Mageau, Elliot, Dumais, Demers, & Rousseau, 2008) among other humanistic motivation theories which consists of understanding the whole person and the importance of goals, needs, affect, desires, and drives as it relates to past experience, our perceptions of the current information and initiation of motivation (Weiner, 1989).

2.5 Key Theories of Motivation in Sport

Overall, motivation remains a critical factor within competition and performance related to athletics because of its impact on an athlete's drive to continue training and competing at a high performance level. Since motivation varies among individuals and reasons for engagement in activities such as athletics are varied, researchers continue to examine how motivation affects individuals differently (Hagger & Chatzisarantis, 2007; Pelletier, Rocchi, Vallerand, Deci & Ryan, 2013; Spray, Wang, Biddle, & Chatzisarantis, 2006; Vallerand, 2007; Weiss & Ferrer Caja, 2002). Cucui and Cucui (2014) suggested that motivation is thought to be a primary, driving factor in the optimization of athletic performance and success due to the motivational governance over choices and decisions made by the individual athletes about their participation and effort given in their respective sport. Previous literature suggested that understanding motivation within athletic settings involves examining what sources of motivation one possesses as well as what conditions and processes are present that are supporting or hindering an individual's growth orientation and overall functioning (Deci & Ryan, 2002; Duda & Hall, 2001; Hagger & Chatzisarantis, 2007; Vallerand & Rousseau, 2001).

However, motivation as it relates to humans is quite complex and gains even more complexity when studied within sport settings and college SA populations. Thus, the existence of

available motivational theories is expected to assist the researcher in creating a conceptual framework of motivation in sport and using its associated constructs and measures in order to examine, most specifically, college SAs and motivation in sport. Motivation in sport has no longer been thought of as a uni-dimensional psychological construct as discussed in the social learning theory (Bandura, 1986; 1977) but has now been considered multi-dimensional in nature as discussed within contemporary theories of motivation such as the self-determination theory (SDT) (Deci & Ryan, 1985; Ryan & Deci, 2000) and the achievement goal theory (AGT) (Duda, 2001; Duda & Hall, 2001; Nicholls, 1989). The SDT and AGT have been considered by many to be the most prolific of all the motivational theories studied within sport and physical activity settings (Deci & Ryan, 2002; Duda & Hall, 2001; Hagger & Chatzisarantis, 2007; Ntoumanis, 2012; Roberts, Treasure, & Conroy; Standage & Ryan, 2012).

2.5.1 Achievement Goal Theory

The social cognitive-based AGT has been frequently used within sport and physical activity motivation and educational research and its premise focuses on the decision-making involvement and activity of humans versus human passivity through the initiation and planning of behaviors with a cognizance of the surrounding social and environmental context (Roberts, 2012). Nicholls (1989) stated that the overarching concept of the AGT is for an individual to develop criteria for judging successful or unsuccessful competency-based outcomes and by exhibiting the ability or avoiding showing the inability to perform a task in evaluative settings. The AGT consist of two types of involvement (task and ego) in the attainment of goals in achievement settings like education and sport with task goals focusing on one's own mastery, effort, learning and improvement and with ego involvement comprising of outcome-based and competitive-based goals (Duda, 2001; Duda & Hall, 2001; Nicholls, 1989). Task and ego goal orientations have been based on being independent yet dynamic, cognitive schemas (and not trait or needs-based) that are used to assess an individual’s personal criteria or theory of achievement and success (Nicholls, 1989).

The AGT has suggested that an individual will develop a propensity to assume either a task goal orientation or an ego goal orientation in achievement situations due to childhood and adolescent socialization experiences (Duda, 2001; Duda & Hall, 2001; Harwood, Spray, & Keegan, 2008; Nicholls, 1989). Task goal orientation involves goals that include a focus on the self and improvement relative to one's own past performances where the individual's perceived ability and success is not based on a comparison to others (Duda & Hall, 2001; Nicholls, 1989). In contrast, ego goal orientation involves goals that are competency-based in direct relationship to competition and where one compares their performance with others and where one's success is defined on defeating others (Duda & Hall, 2001; Nicholls, 1989).

Within sport and education settings, research has suggested that task goal orientation is more adaptive than ego goal orientation and is strongly associated with mastery and personal growth due to the certitude that one's success is related to a positive work ethic, approaching versus avoiding challenges, possessing greater perceived control, positive emotions, persistence and protection from disappointment, frustration, and lack of motivation when an opponent's performance is thought to be superior as well as typically performs well in evaluative settings (Bortoli, Bertollo, Comani, & Robazza, 2011; Biddle, Wang, & Kavussanu, 2003; Dweck & Leggett 1988; Kaplan & Maehr 2007).

However, ego task orientation has been known to be a more prevalent orientation in sport and is associated with individuals performing less well in evaluative situations, avoiding challenging tasks, having less effective learning or performance strategies, possessing higher concern for external demonstrated competence and a higher likeliness to reduce their efforts, cease trying or make excuses, due to judging their own success to how they compare to others knowing they cannot control how others perform and more difficulties in maintaining high perceived competence where low or maladaptive achievement behavioral patterns emerge and continue (Biddle, Wang, & Kavussanu, 2003; Bortoli, Bertollo, Comani, & Robazza, 2011; Dweck & Leggett, 1988; Kaplan & Maehr, 2007). Xiang, McBride, Bruene, and Liu (2007) found

in youth physical education settings that ego goal orientation can support positively linked achievement outcomes if the individual perceives their level of competence to be high and if they also possess a strong task goal orientation.

While the AGT has been found to have been critical to the applied use in the practice of sport and physical activity motivation behavior over the past 20 years, the AGT has been known to plateau in regards to motivational research in recent years and has been recommended to include more longitudinal studies and involve more context-specific as well as situation-specific environments studying both individual athletes and teams in evaluative settings (Harwood, Spray, & Keegan, 2008). Over the past decade, the use of the SDT in research and interventions within physical activity, sport and well-being has shown an exponential increase and has advanced the motivation literature to recognize not only the vital component of competence but also the substantiation of two additional psychological needs (autonomy and relatedness) into the framework of human motivation among other factors that influence motivation in humans (Deci & Ryan, 1985, 2000, 2002; Ntoumais, 2012; Pelletier, Fortier, Vallerand, & Brière, 2001; Pelletier, Fortier, Vallerand, Tuson, Briere, & Blais, 1995; Pelletier, Rocchi, Vallerand, Deci & Ryan, 2013; Ryan & Deci, 2000a, 2007; Spray, Wang, Biddle, & Chatzisarantis, 2006; Standage & Ryan, 2012; Vallerand, 2007; Vallerand, Pelletier, & Koestener, 2008). Due to the aforementioned limitations in the AGT within sport research and the advancements and applicability of the SDT, the theoretical framework of the SDT is further discussed along with its constructs and will be used to inform the research study on collegiate SAs' motivation in sport over time and as it relates to wellness and demographic characteristics of the collegiate SA sample.

2.5.2 Self-Determination Theory

An understanding of the SDT, a macro-theory of human motivation, as a theoretical framework along with its associated sub-theories and psychological constructs is essential for understanding motivation in sport. The organismic and dialectically-based SDT and its premise

has been known to involve the social context and the organism as an active agent in a process called organismic integration where an individual assimilates new experiences that have been mastered within a social and cultural contexts with the intent to achieve autonomous self-regulation, a coherency with one's self and cohesiveness with other identifications (Deci & Ryan, 1991, 2002). Self-regulation refers to the volitional and internalized process of enjoyment, engagement and persistence of activities by effectively monitoring, managing and modifying one's thoughts, feelings, and behaviors further enhancing one's performance, well-being, creativity and motivation (Deci & Ryan, 1985, 1991).

The facilitation of this integration process within the SDT suggested that motivation is built upon the conception that humans possess greater self-regulation and sustainable integration into social and cultural contexts through high levels of competence (e.g., confidence, ability, opportunity for challenges), relatedness (e.g., sense of belonging, interpersonal relationships) and autonomy (e.g., one's efforts to regulate their own actions) where, ultimately, this holistic regulation becomes integrated and internalized (Deci & Ryan, 1985, 1991). Thus, the SDT has posited that the source and dialectic quality of regulation can influence motivation in individuals as it refers to engagement and persistence of behaviors (Deci & Ryan, 1985, 2000).

Four psychological sub-theories constitute the greater SDT macro-theory that work in conjunction with one another to explain phenomena and processes of motivation involving contexts, situations and environmental circumstances (i.e., basic needs theory, cognitive evaluation theory, causality orientations theory, organismic integration theory,) (Deci & Ryan, 2000a; Ryan & Deci, 2007).

The first sub-theory of the SDT, the basic needs theory, implies that the three psychological needs, autonomy, competence and relatedness, are innate, universal human needs that are reached via supportive social contexts that help to satisfy these needs and promote overall growth, psychological health, well-being and integration (Deci & Ryan, 1985, 2008; Deci & Vansteenkiste, 2004; Ryan, 1995). The SDT has suggested that when these three psychological

needs (competence, relatedness and autonomy) are met, an individual's behavior is more likely to become internalized, an opportunity for greater levels of self-regulation and intentional ownership over actions will take place and, thus, a determination of one's intrinsic motivation will be established (Ryan, 1995; Ryan & Connell, 1989; Ryan & Deci, 2007; Vallerand, 1997). In contrast, when these three psychological needs are not met or are thwarted, a person's behavior becomes more externalized and is less autonomous or self-determined, there less opportunity for self-regulation, there is less perceived situational control, and a more controlled form of regulation or lack of motivation becomes established (Deci & Ryan, 2000, 2002).

A second SDT sub-theory, the cognitive evaluation theory, is centered on two distinctive motivation types (e.g., extrinsic and intrinsic) and involves understanding influences of social, cultural and environmental contexts on autonomy and competence as well as how external or internal factors either facilitate or diminish intrinsic motivation (Deci & Ryan, 1985, 1991, 2002; 2008). Ryan and Deci (2000b) defined intrinsic motivation as "the doing of an activity for its inherent satisfactions rather than for some separable consequence" (p. 56) whereas extrinsic motivation has been defined as "the doing of an activity in order to attain some separable outcome" (p. 60). Deci and Ryan (1985) explained that enhancement of intrinsic motivation is derived from situations and environments that foster a high level of perceived competence and are autonomy-supportive versus those hinder perceived competence and autonomy.

Positive feedback and reinforcement, events perceived as informational and interesting, opportunities for choice, favorable challenges, and absence of disparaging evaluations have been demonstrated to facilitate intrinsic motivation and self-determined functioning especially with the presence of autonomy or internal locus of control because it allows for the need for competence to be satisfied (Deci & Ryan, 1985, 2000, 2002; Ryan & Deci, 2000a, 2000b; Vallerand & Reid, 1984). In comparison, negative feedback or reinforcement, threats, pressures stemming from competition, and extrinsic rewards especially those that are anticipated and conditionally related

to the performance of a task have been shown to undermine intrinsic motivation (Deci, Koestner & Ryan, 1985, 1999, 2000, 2002; Ryan & Deci, 2000a, 2000b).

A third sub-theory of the SDT, the causality orientations theory, addresses that individuals are predisposed to differing levels of orientations (e.g., autonomous, controlled and impersonal) where individuals with an autonomous orientation have been known to possess higher levels of integration and internalization due to assiduous satisfaction levels of autonomy, competence and relatedness which have been linked to adaptive behaviors and positive physical and psychological health outcomes (Deci & Ryan, 1985; 2008; Ryan & Deci, 2002). A controlled orientation has been associated with competence and relatedness needs being met to some extent although acting as a hindrance for autonomy needs being satisfied because of lessened self-determined functioning and well-being due to external factors and situational circumstances (Deci & Ryan, 1985; 2008). An impersonal orientation has been empirically connected to the thwarting of autonomy, competence and relatedness needs which, in turn, has led to a detriment of functioning, well-being, self-worth and vigor for life (Deci & Ryan, 1985; 2008).

A fourth SDT sub-theory, the organismic integration theory, focuses on autonomous versus controlled motivation, the mechanism of internalization which is the transformation of an externally regulated motive into an internally regulated motive where assimilation occurs, how individuals can make shifts along this internalization-based continuum and a taxonomy of motivation types hosting varying degrees of motivation supporting the multi-dimensional nature of motivation (Deci & Ryan, 1985, 2008; Ryan & Deci, 2000b). The specific types of motivation included within this taxonomy include intrinsic motivation, four types of extrinsic motivation and amotivation that are deliberated further in a subsequent section.

Autonomous motivation has been described as comprising “both intrinsic motivation and the types of extrinsic motivation in which people have identified with an activity’s value and ideally will have integrated it into their sense of self” (Deci & Ryan, 2008, p. 182). Controlled motivation has been explained as “consisting of both external regulation, in which one’s behavior

is a function of external contingencies of reward or punishment, and introjected regulation, in which the regulation of action has been partially internalized" (Deci & Ryan, 2008, p. 182). Volitional control, self-directed behaviors and persistence have been consistent with autonomous motivation whereas controlled motivation has been heightened by behavioral aspects such as avoiding shame and punishment, possessing a lack of volition, an involvement of ego-driven behavior, and a level of self-esteem that hinges on external factors or reinforcements (Deci & Ryan, 1985, 2008; Ryan & Deci, 2000b, 2002). Amotivation has been conveyed as "a lack of intention and motivation" (Deci & Ryan, 2008, p. 182).

For the purposes of the research study and its use of the greater SDT, the tenets from the cognitive evaluation sub-theory, basic needs sub-theory, causality orientation sub-theory, and organismic integration sub-theory will be used to support the theoretical framework of the greater SDT in order to answer the study's research questions as it relates to collegiate SAs and sport motivation over time. The self-determination continuum of internalization, the taxonomy of specific motivation types and causality orientations, the sport motivation measure and the supportive evidence-based outcomes of motivation in sport are discussed in the following sections.

2.5.3 Self-Determination Theory: Taxonomy, Core Constructs and Sport Motivation Measure

According to Deci and Ryan's SDT (1985), internalization as it relates to human motivation lies on a continuum based upon three regulatory constructs or types of motivation (intrinsic motivation, extrinsic motivation, or amotivation) (See Figure 2.1). Intrinsic motivation, the most self-determined, internalized, non-conflicted and sustainable source of motivation, is positioned on one end of the continuum with an autonomous causality orientation focusing on participation in an activity achieving a level of competence, autonomy and relatedness as well as internal satisfaction, mastery and enjoyment (Deci & Ryan, 1985, 2000, 2002; Ryan & Deci, 2000b, 2007).

Positioned in the middle of the continuum is extrinsic motivation which focuses on externally controlled factors inclusive of four regulation subtypes: integrated regulation, identified regulation, introjected regulation and external regulation (Deci & Ryan, 2002; Ryan & Deci, 2000b). Integrated regulation is the most self-determined type of extrinsic motivation positioned closest to intrinsic motivation on the continuum, has an autonomous causality orientation and refers to the congruency between an action and an individual's identified values, goals and basic needs (Deci & Ryan, 2002; Ryan & Deci, 2000b).

A second extrinsically-based regulation style is identified regulation when an action becomes consciously connected to personal importance for an individual, is characteristic of high commitment and engagement levels within an identified behavior and has an autonomous causality orientation but to a lesser extent than integrated regulation (Deci & Ryan, 1985, 2002; Ryan & Deci, 2000b).

A third extrinsic regulation type is introjected regulation which describes one's actions that are associated with pressures associated with the avoidance of guilt, anxiety, and shame, the need to be approved by others, and one's self-esteem being strongly related to ego involvement (Deci & Ryan, 2002; Ryan & Deci, 2000b). Introjected regulation is considered internally driven yet its causality orientation is more controlled than not leading to this regulation type having lesser self-determined behaviors (Deci & Ryan, 2002).

The fourth extrinsic regulation type is external regulation which is the least self-determined type of extrinsic motivation positioned closest to amotivation on the continuum, has a fully controlled causality orientation and what directs actions are externally controlled rewards and consequences (Deci & Ryan, 2002; Ryan & Deci, 2000b).

Amotivation, the least self-determined and least sustainable source of motivation, is positioned on the opposite end of the continuum from intrinsic motivation marking an absence of motivation as it relates to competence, autonomy, relatedness, is associated with non-intentionality and a lack of regulation and its causality orientation is one that is impersonal,

depersonalized and lacks a connection to personal value (Deci & Ryan, 1985, 2002; Ryan, 1995). See *Figure 2.1* for the Self-Determination Theory's continuum of human motivation.

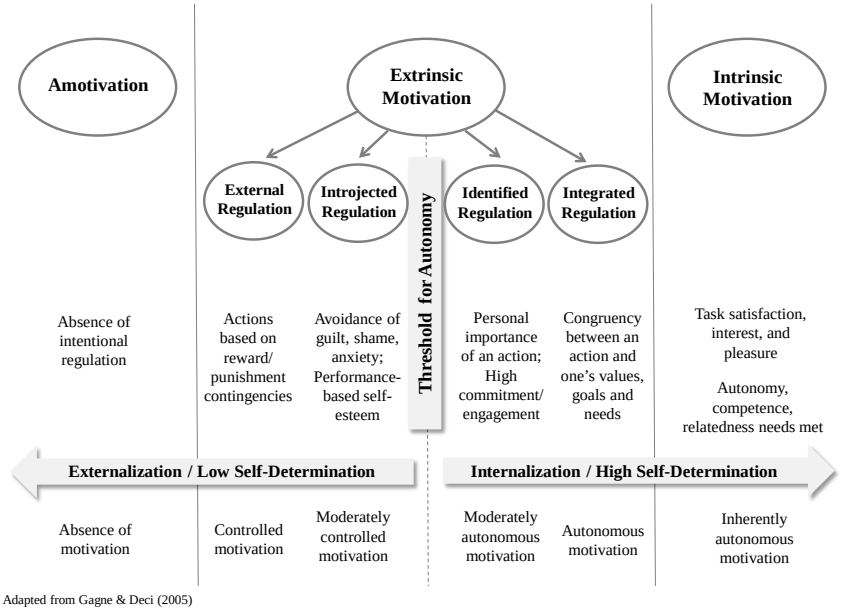


Figure 2.1. Illustrates the Self-Determination Theory's taxonomy of human motivation where intrinsic motivation lies on one end of the continuum and amotivation lies on the opposite end of the continuum with extrinsic motivation in the middle of the continuum.

In order to measure the sport motivation types and levels in collegiate SAs over three time points, the SDT-based Sport Motivation Scale II (Pelletier, Rocchi, Vallerand, Deci & Ryan, 2013) will be employed for recruited SA participants to complete. Pelletier et al. (1995) first designed the 28-item Sport Motivation Scale (SMS) which has been widely used in sport motivation studies since its inception but Pelletier et al. (2013) revised the initial SMS version into the SMSII. The SMS scale (Pelletier et al., 1995) measured seven types of athletes' motivation within their given sport: intrinsic motivation to know, intrinsic motivation to accomplish, intrinsic motivation to experience stimulation, identified regulation, introjected regulation, external regulation, and amotivation but it did not measure integrated regulation. The

newly revised SMSII incorporated integrated regulation, the most self-determined form of extrinsic motivation, into its revised 18-item scale to further align the scale's theoretical framework to the Self-Determination Theory (Deci & Ryan, 1985). The 18-item SMS II (Pelletier et al., 2013) measures six motivation types that include intrinsic motivation (measured as a whole), integrated regulation, identified regulation, introjected regulation, external regulation, and amotivation on a 7-point Likert-type scale (i.e., 1 = Does not correspond at all to 7 = Corresponds exactly) with summed construct scores ranging from three to 21.

2.6 Self-Determination Theory: Implications in Sport Motivation

Numerous previous studies have confirmed that the utility of the empirically sound SDT framework within athletic settings as highly suitable for measuring, predicting and understanding motivation and regulation types in athletes (Vallerand, 2007). In athletics, competition or performance was understood to be a determinant of sport motivation with successes or failures acting as mechanisms for increasing or decreasing levels of intrinsic motivation (Blanchard, Mask, Vallerand, de la Sablonniere, & Provencher, 2007; Deci & Ryan, 1985; 1991; Tauer & Harackiewicz; Vallerand & Losier, 1999). Studies have found that self-determined motivation types positively predict factors in sport and physical activity such as concentration, participation frequency, commitment, effort, persistence, flow, less burnout, sportsmanship, and overall performance (Gillet, Berjot, & Gobance, 2009; Vallerand, 2007)

Vallerand (1997) also considered competence, autonomy and relatedness as mediators of social factors on sport motivation. Similar to successes and failures in athletes, social situations that were perceived to be supportive of the three basic psychological needs positively influenced intrinsic motivation whereas negatively perceived social situations led to a lack of self-determined motivation (Brunel, Vallerand, & Chantal, 2004; Deci & Ryan, 1985; Ryan & Deci, 2002; Vallerand & Grouzet, 2001). Previous research has demonstrated that sport performance positively predicts levels of self-determination through an athlete's own perceived notions of

relatedness, competence and autonomy (Blanchard et al., 2007; Gillet, et al., 2009). Intrinsic motivation plus moderately self-determined motivation types such as integrated and identified regulation have been known to lead to positive effects in sport that include increased well-being, mental hardiness, divergent thinking, persistence, self-esteem, body satisfaction, and perceived life quality (Deci & Ryan, 2008; Gillison et al., 2006; Hagger, Hardcastle, Chater, Mallett, Pal, & Chatzisarantis, 2014; Sebire et al., 2009). Moreover, intrinsic motivation was also found to be a negative predictor of athlete burnout according to whereas amotivation and other less self-determined motivation types is a positive predictor of burnout in athletes (Cresswell, 2009; Cresswell & Eklund, 2005a, 2005b; Holmberg & Sheridan, 2013; Raedeke & Smith, 2004).

Pelletier et al. (1995) found that athletes competing with mainly through external regulation were less self-determined and experience less positive emotions and levels of sport satisfaction. At the collegiate level, higher levels of external regulation have been found in collegiate athletes whom placed more emphasis on the prestige of a higher division institution and its athletic programs rather than those of lower division schools (Medic, Mack, Wilson, & Starkes, 2007). In addition, having an athletic scholarship has been illustrated a reduction in intrinsic motivation due to more emphasis on extrinsic motivators such as pressure relating to increased performance expectations or to avoid negative consequences (Deci, Koester & Ryan, 1999; Kingston, Horrocks, & Hanton, 2006; Martens & Webber, 2002). Yet, Amorose and Horn (2001) found no differences in scholarship athletes versus non-scholarship athletes as it related to intrinsic motivation at both the pre and post season time points. Readdy, Raabe, and Harding (2014) studied collegiate football players involved in an extrinsically-based reward program and found decreases in amotivation and external regulation and increases in intrinsic motivation pre to post program.

Motivational differences between male and female SAs have been found in the literature with male SAs showing higher levels of self-determination than female SAs (Amorose & Horn, 2000) and that female SAs demonstrated lower levels of self-determined motivation types due to

higher levels of tension and pressure when competing in their sport which was associated with during competition that yielded higher competitive trait anxiety (Gill, 1988; Segal & Weinberg, 1984). Yet, in contrast, other research studies illustrated that the male SAs exhibited lower levels of self-determination when compared to female SAs which, according to the authors, was related to more extrinsic forms of motivation found in the male SAs (Petherick & Weigand, 2002; Pelletier et. al, 1995).

Coaches and coaching methods have played a large role in the development of athletes' psychological function, confidence, motivation, and skill level in sport to enhance the effectiveness of performance (Shen, Garn, McCaughtry, Martin, & Fahlman, 2013). Research has illustrated that coaches who encourage inter-athlete competition or who voice inter-athlete comparisons can weaken feelings of autonomy and, ultimately, internalization (Fortier, Vallerand, Briere, & Provencher, 1995). In addition, studies have indicated that as younger SAs mature into adolescent and emerging adult SAs, increased frequency of coach and parental critiquing has been associated with leading to an increase in external regulation and amotivation which may translate into other personal and professional life facets (Conroy, Kaye & Coatsworth, 2010). Hollembeak and Amorose (2005) indicated that coactive SAs when compared to interactive SAs perceived that they had more autonomy support and individualized feedback from their coaches which led to feelings high in efficacy when performing their specific tasks and movements.

Amotivation is positively associated with sport dropout (Pelletier, Fortier, Vallerand, & Briere, 2001). In comparison, as an athlete moves on the internalization continuum from amotivation to more self-determined forms of motivation (e.g., identified, integrated, intrinsic), there were increases seen in positive consequences and outcomes as it relates to a more sustainable forms of motivation and an increased level of satisfaction in athletic performance (Pelletier et al., 1995). Amotivation has been acknowledged as a significant hindrance of one's participation in activities such as sports because of feelings of incompetency, lack of control, and

a deidentification of reasons to remain participating in their respective activity (Deci & Ryan, 1985; Hayenga & Corpus, 2010; Pelletier et al., 1995).

However, few studies have been conducted to show changes over time in sport motivation in athletes (Amorose & Horn, 2001; Boiche & Sarriazan, 2007; DeFreese & Smith, 2014; Gaudreau and Antl, 2008; Gillet, Berjot, & Gobance, 2009; Pelletier, Fortier, Vallerand, Tuson, Briere, & Blais, 1995; Readdy, Raabe, & Harding, 2014; Vallerand & Reid, 1984) and no literature could be found that studies sport motivation sources over three time points throughout an athletic seasons (e.g., pre-season, in-season, off-season).

2.7 Wellness in the College Setting

Beyond an individualistic perspective, it has become important to understand general health and wellness behavior patterns and trends of individuals even before they become college-aged students. As early as middle school, students have been found to formulate inaccurate and misinformed notions of wellness which may traverse into the college years where students' personal wellness orientations run the risk of being incomprehensive in nature leading to possible negative health outcomes (Placek, Griffin, Dodds, Raymond, Tremino, & James, 2001). Studies revealed that the probability of unhealthy adolescents completing high school and transitioning into higher education is low due to cognitive/academic and psychosocial variables explaining the largest reasons for health-related educational deficits (Haas & Fosse, 2008).

Furthermore, there has been a positive correlation seen between adolescent and EA student wellness and academic achievement (Horton, & Snyder, 2009; Chomitz, Slining, McGowan, Mitchell, Dawson, & Hacker, 2009). Students who were shown to have less than healthy levels of physical health and those who were not consistently practicing healthy behaviors were both strongly linked to academic-related struggles (ACHA, 2015; Pascarella and Terenzini, 2005). Overall, stress (30.3%), anxiety (23.7%), and sleep difficulties (20.4%) have been listed as the top three factors that are negatively affecting academic performance for EAs attending college (ACHA, 2015). Additionally, academic struggles and negative well-being levels for SAs have

been strongly associated with role conflict due to the discrepancy of the athlete role versus the student role (Killeya-Jones, 2005; Settles, Sellers & Damas, 2002).

As EAs matriculate into college, studies have found that EAs frequently experience significant changes to their own physical, emotional, mental and spiritual well-being (Rozmus, Wysochansky & Mixon, 2005). Although these new changes can be favorable, pressures associated with academics, socialization to college life and a new discovery of empowerment over one's health care decisions and lifestyle behaviors have been known to be associated with adverse impacts a EAs' overall well-being (Gores, 2008; Rozmus, Wysochansky & Mixon, 2005; Von Ah, Ebert, Ngamvitroj, Park & Kang, 2004). The EA population and the SA sub-population alike have been known to have first-year adjustment difficulties and high stress levels related to different living arrangements, meeting several new people in a relatively short period of time, managing a budget and newfound financial decisions, and maneuvering through a new campus and surrounding community (Ahlgren-Bedics & Monda, 2009; Prancer, Hunsberger, Pratt, & Alisat, 2000). While participating in athletics has been found to assist in the development of confidence, global self-esteem and cohesiveness to one's team, there is a higher prevalence of collegiate SAs over-identifying with their athletic versus student role, thus, causing a disruption in the ability to explore other wellness dimensions (Kornspan & Etzel, 2003; Lavallee & Robinson, 2007). As discussed in the aforementioned sections about risk factors for college-going EAs and the added stressors for SAs, numerous hazards have been studied within the SA and greater EA populations as it relates to detriments in health and wellness.

Research has provided evidence that less than desirable behaviors inaugurated during EA may persist into adulthood and students who leave college without having adopted positive health and wellness behaviors are much less likely to ever adopt them (Horton, & Snyder, 2009; Kwan, Cairney, Faulkner & Pullenayegun, 2012). According to researchers, wellness has proved to have lifelong and holistic effects on the individuals themselves, academic success, and business success; yet, few studies appear to exist relative to holistic wellness in college students thus

lacking evidence in the evaluation of the multi-dimensional nature of wellness (Adams, Bezner Drabbs, Zambarano, & Steinhardt, 2000; Myers & Mobley, 2004). Moreover, sedentary issues leading to overweight and obesity, lack of nutritious eating habits, disordered eating, eating disorders, substance use and abuse, binge drinking, and unsafe sexual practices have been established as priority health concerns for the college-aged population and health promotion activities should continue to be prioritized on college campuses (American College Health Association, 2015; Centers for Disease Control and Prevention, 2016).

Personal growth, a sense of identity and an increase in personal responsibility have been known to be essential goals of academic institutions seeking to promote and affirm positive and productive behaviors in adulthood (Rogers, 1996). Wellness education has been shown to have the potential for creating an identity and climate of engagement in nurturing one's overall wellness that is likely to extending over a person's lifespan (Sweeney & Witmer, 1991). Recommendations from health and wellness experts to adopt healthy behaviors do not necessarily translate into an individual's lifelong behavior change; however, exposure to wellness education and working with experts can empower individuals to implement the recommended lifestyle changes, and increase their chances for lifelong, sustainable behavior change (Jones, 2012).When combined with psychological variables such as positive self-efficacy, motivation and positive outlook and behavior change variables like self-reflection, self-efficacy, motivation, perseverance and goal achievement, behavior change can successfully occur and become sustainable when students encounter a wellness education program (Liguori & Carroll-Cobb, 2012).

Several colleges and universities have offered lifetime wellness courses expecting to educate students and give them the skill sets needed to maintain or improve their wellness behavior. Researchers have concluded that university health promotion courses created positive changes in attitudes and increased levels of knowledge in health and wellness promoting behavior change (Carlson, DeJong, Robison & Heusner, 1994; Robbins, Powers & Rushton, 1992). Studies also found that students' perceptions of their knowledge and actual knowledge significantly

improved in all wellness topics, after participating in a health and wellness education course (Carlson, DeJong, Robison & Heusner, 1994; Devoe & Kennedy, 2001; Mack, Mick, & Shaddox, 2004; McCormick & Lockwood, 2006; Robbins, Powers & Rushton, 1992). Further, previous research on holistic wellness programs in the college setting has found improvements in perceived stress, psychological and physical functioning, quality of life, physical disease states such as diabetes and with numerous dimensions of wellness (Gieck & Olsen, 2007; Hermon & Hazler, 1999; Klepac, 1996; Larson, 1999; Myers, Sweeney & Witmer, 2000; Myers, Sweeney, Witmer, & Hattie, 1988; Vecchione, 2000). While positive outcomes in holistic wellness programming have been demonstrated, the lack of studies promoting and evaluating holistic wellness in diverse student groups (Myers & Mobley, 2004; Spurgeon & Myers, 2010) and SA groups (Watson & Kissinger, 2007) has been discussed in the literature as a research need to that needs attention. Watson and Kissinger (2007) also suggested the specific need to examine and evaluate holistic wellness as it relates to the additional stressors and adjustments of being an SA as well as the program efficacy outcomes and its effects on SA holistic wellness.

Evidence has illustrated that the health and wellness of college students remains a budding priority for college administrators; yet, this is quite often budgetarily or hierarchically marginalized which creates the discussion of a public health issue all on its own for the emerging adult population (Stewart-Brown, Evans, Patterson, Peterson, Doll, Balding & Regis, 2000). The number of higher education institutions requiring a health promotion or wellness course has been shown to be at its lowest total since the late 19th century with approximately 40% listing the requirement within their undergraduate curricula (Cardinal, Sorensen, & Cardinal, 2012). Yet, studies have demonstrated over time high program efficacy and positive outcomes for students regarding these types of courses within the educational component in higher education (Carlson, DeJong, Robison & Heusner, 1994; Devoe & Kennedy, 2001; McCormick & Lockwood, 2006; Robbins, Powers & Rushton, 1992).

When wellness is less transient and more integrated into the individual's behavior and lifestyle, it becomes valuable to the person as well as to the organization (e.g., university, college, business) to which the person belongs (Stewart-Brown, Evans, Patterson, Peterson, Doll, Balding & Regis, 2000; Johnson, 2000; Powers, Myers, Tingle, & Powers, 2004). Hermon (2005) suggested that a holistic approach to wellness on college campuses in imperative for addressing student retention and academic persistence challenges. In addition, it has also been postulated that a deeper understanding of factors that affect holistic wellness from a college counselor perspective would elicit better outcomes for EAs and well as SAs well-being (Gallagher, 2005; Watson & Kissinger, 2007). For the purposes of the research study and its use of a holistic or multi-dimensional wellness model, the greater term, "wellness," was delineated by means of discussing the evolution of wellness, current models of holistic wellness and the proposed multi-dimensional wellness model in order to answer the study's research questions as it relates to collegiate SAs and well-being.

2.8 The Multi-Dimensional Wellness Delineation

Although the various dimensions of wellness are often referenced in health and wellness contexts and programs, few have been found to discuss multi-dimensional wellness in detail or at a personal level. The term "wellness" has become shorthand for physical fitness and personal health but dimensions outside the physical are equally as important in making students healthy and successful in their daily lives. Physical health and nutrition have typically been the focus of most wellness definitions over the past several decades. Thus, it is important to operationalize "wellness" from a field-wide perspective. The World Health Organization's constitution states "health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (World Health Organization, 1946, para 1). In the late 1950's, a new concept of high-level wellness emerged which was defined as "an integrated method of functioning, which is oriented toward maximizing the potential of which the individual is capable" looking beyond simply avoiding sickness (Dunn, 1977, p.4).

Stemming from his original definition of high-level wellness, Dunn (1977) insinuated that the experience of wellness is unique to each individual. What is agreed upon by those who study the multi-dimensionality of wellness is that the dynamic interdependence of the dimensions results in the sum of all the dimensions to be greater than the whole. Applying a multi-dimensional approach to wellness in college or earlier is thought to help one become more aware of the interconnectedness of each dimension of wellness (Hettler, 1976, 1980, 1984; Mayol, 2012). This, in turn, may illustrate a greater chance of meaningful and lifetime connections and learning self-exploration, self-reflection and self-responsibility and habitual practices via exposure to one's own personal wellness orientation in college.

While there are differing views on which exact dimensions of wellness are primary or useful, many leaders in the wellness industry share a general agreement that wellness is a conscious, self-directed and evolving process of achieving full potential; that it is multi-dimensional and holistic, encompassing lifestyle, mental, spiritual and environmental well-being; that it is positive and affirming; and that it is a way of living that values health, balance, and the minimization of unhealthy behaviors (Adams, Bezner & Steinhardt, 1997; Dunn, 1977; Hettler, 1976, 1980, 1984; Mayol, 2012; Myers, Sweeney & Witmer, 2000; Myers, Sweeney, Witmer, & Hattie, 1988; Sweeney & Witmer, 1991). Hettler (1976, 1980, 1984) created the six dimensions of wellness model that included intellectual, emotional, social, spiritual, occupational and physical wellness. By balancing these six dimensions and actively seeking to improve them, Hettler believed individuals were able to improve their overall well-being and become more aware of the interrelatedness between each dimension contributing to healthy living (Hettler, 1976, 1980, 1984).

Sweeney and Witmer (1991) first examined wellness from a psychological perspective and developed their theoretical groundwork for holistic wellness and prevention model inquiring into wellness across the lifespan using the psychological theories of human development. These authors referred to wellness as a way of life oriented toward optimal health and well-being in

which the body, mind, and spirit are integrated by the individual to live more fully within the human and natural community. Myers, Sweeney, and Witmer (2000) then created a multidisciplinary wellness model that holistically examined the interaction of five life tasks (spirituality, self-regulation, work, friendship and love) that is representative of major societal institutions that can impinge one's status of health and well-being with spirituality at the core of the model. In 2005, Myers and Sweeney created a revised model called the indivisible self-wellness model that encompasses one single order construct, total wellness, which is comprised of the mind, body and spirit, and five second order constructs which include the creative self, coping self, physical self, social self, and essential self. Myers and Sweeney's (2005) emphasis with this revised model was to focus on a strengths-based approach versus focusing on weaknesses that need improved or changed.

Moreover, Adams, Bezner and Steinhardt (1997, 2000) expanded Dunn's (1977) "high level wellness" model by creating a revised wellness model that took into consideration one's perceived wellness levels acting as a simultaneous function of multiple dimensions of wellness including the physical, spiritual, psychological, social, emotional and intellectual as dimensions of wellness. The researchers stated that other dimensions such as occupational and community or environmental dimensions have also been identified but did not include these dimensions in their model (Adams, Bezner & Steinhardt, 1997; Adams, Bezner, Drabbs, Zambarano, & Steinhardt, 2000).

At present, there are many models and questionnaires available for measuring "wellness." First, the Wellness Inventory (Travis, 1981) is a 120-item survey measuring self-responsibility and love, breathing, sensing, eating, moving, feeling, thinking, playing and working, communication, sex, finding meaning and transcending. In 1984, Hettler developed a six-dimensional wellness model inclusive of physical, emotional, spiritual, social, occupational and intellectual wellness. The National Wellness Institute, then, created a 100-question TestWell inventory (National Wellness Institute, 1999) based from Hettler's model assessing ten

categories: Physical Fitness and Nutrition, Medical Self-Care, Emotional Management, Intellectual Wellness, Occupational Wellness, Spirituality and Values, Safety, Environmental Wellness, Social Awareness and Sexuality and Emotional Awareness targeting the teen, college, adult and older adult populations.

A third instrument to discuss, the Perceived Wellness Survey (Adams, Bezner, & Steinhardt, 1997), is a 36-item assessment consisting of six dimensions of wellness: Physical, Intellectual, Emotional, Psychological, Social and Spiritual. Further, a fourth assessment, the Wellness Evaluation of Lifestyle (WEL) (Myers, Luecht & Sweeney, 2004) measures 16 dimensions of wellness factored down to five life tasks: Creative, Coping, Social, Essential and Physical. In 2004, Hattie, Myers, and Sweeney revised this assessment to a four-factor survey (4F-WEL) inclusive of Spiritual, Physical, Cognitive-Emotional and Relational Wellness. Further revisions of the wellness inventory, now titled WEL-S, ensued to include 120 questions appropriate for people aged 10-56+ years. A well-known fifth survey is the American College Health Assessment- National College Health Assessment II (2000), which measures health issues seen at the college population such as Alcohol, Tobacco and Drugs, Sexual Health, Weight, Nutrition and Exercise, Mental Health, Personal Safety and Violence.

While there is merit in each of the aforementioned survey instruments known to measure wellness comprehensively, they are not without limitations. Travis' (1981) 120-item Wellness Inventory is time-consuming for the participant to complete and is not designed for a target population of college students. The 100-item TestWell Inventory (The National Wellness Institute, 1992) measures the effects of health behaviors and risks and assesses multiple dimensions of wellness; however, it is also a lengthy instrument, is not a free measurement tool and does not include questions about financial wellness. Adams et al.'s Perceived Wellness Survey (1997) is less lengthy at only 36 questions, although it does not address a target audience of college students and does not address the dimensions of environmental, occupational and financial wellness.

The 120-item WEL-S inventory (Hattie et al., 2004) is an extensive survey, is not a free assessment tool, does not specifically target the college-aged student and failed to measure environmental, occupational and financial wellness. While the American College Health Assessment- National College Health Assessment II (2000) targets the college student, it is only a measurement tool of one's personal health risks and does not measure the multi-dimensionality of one's wellness. Thus, the Multi-Dimensional Wellness Inventory (MDWI) (Mayol, Schreiber, & Scott, 2017; Scott, Mayol & Schreiber, 2014) was created because none of these existing surveys housed the totality of the dimensions created in the MDWI.

2.9 The Multi-Dimensional Wellness Model, Associated Constructs and Course Intervention

Mayol (2008, 2012) further refined Hettler's (1976, 1980, 1984) and Adams et al. (2000) wellness models focusing on self-reflection and self-responsibility skills through nine dimensions or constructs of wellness (physical-exercise, physical-nutrition, mental, social, spiritual, intellectual, environmental, occupational, and financial), including how each interconnects with one another in a balanced or unbalanced state. See *Figure 2.2* for the Multi-Dimensional Wellness model used in this study.

Figure 2.2. Illustrates the multi-dimensional wellness model and its associated constructs used in this study and in the 15-week multi-dimensional wellness course.

In order to measure the nine wellness constructs in collegiate SAs, the 45-item Multi-Dimensional Wellness Inventory (MDWI) (Mayol, Schreiber, & Scott, 2017; Scott, Mayol & Schreiber, 2014) will be utilized for recruited SA participants to complete. The MDWI (Scott et al., 2014), designed to measure one's perceived behavior with respect to personal wellness orientation within nine dimensions, consisted of five items per dimension that were summed to create nine single wellness constructs as mentioned in Mayol's (2008, 2012) refined model. A 1-4 Likert-type scale was used to measure each item (e.g., 1 = Does not describe me at all to 4 = Absolutely describes me); thus, summed construct scores range between five and 20.

Mayol (2008, 2012) constructed operational definitions for each wellness construct and are defined as follows. Physical wellness exercise is defined as one's awareness and engagement in recognizing the need for regular physical activity for the prevention of chronic disease states and for the promotion of the many other physiological and psychological benefits of exercise Physical wellness nutrition is one's awareness and engagement in learning about daily dietary habits and overall nutrition needs and necessities to make for a healthy lifestyle as well as the prevention of chronic disease states. Mental wellness is one's awareness and engagement in how one's appraises and copes with stressors and is the degree to which one thinks, feels and behaves in life and in work while social wellness is one's awareness and engagement in communication, attitude, civility, personal relationships and contributions made to one's surroundings, community and society.

Spiritual wellness is one's awareness and engagement in one's search for meaning and purpose in human existence through a deep appreciation for the depth of life, a sense of inner peace, overall satisfaction and confidence involving ethics, values beliefs, and morals and intellectual wellness is one's awareness and engagement in creative and mentally stimulating thoughts and activities. Environmental wellness is one's awareness of and engagement in acts of environmental sustainability and the upkeep of environmental quality measures including access to clean air, nutritious food, sanitary water, adequate clothing, and safe environment within one's

community. Occupational wellness is one's awareness and engagement in recognizing personal satisfaction, meaning and enrichment through understanding roles and responsibilities as it relates to a career and vocation, determining work/life balance and utilizing strengths, values and interests in the workplace and financial wellness is one's awareness of one's financial situation and stability as it relates to financial management and responsibility.

Through this multi-dimensional model of wellness, the intent is to begin the discussion, intervention and process of securing a level of personal connection and engagement in the various wellness dimensions for college students through their understanding of their own personal wellness orientation. Wellness is fluid throughout the life cycle and, in turn, should remain fluid throughout a student's college tenure and within the campus culture- not starting and stopping within one semester's time. Exposure and reinforcement of health and wellness education via education specialists in this domain can strengthen students' perceptions of health and wellness and embolden them to initiate or maintain these positive behaviors thereby increasing their probability for well-rounded individual success (Jones, 2012).

In this study, a comparison of SAs who completed a multi-dimensional wellness course designed by Mayol (2008, 2012) versus those SAs who did not between all nine wellness scores were assessed and discussed. The intervention that was used for the study incorporates a 15-week semester, one credit hour holistic wellness course that is set to meet twice weekly targeting the first year college student. All SAs attending this institution, regardless of major, must complete this course along with their non-athlete peers in order to meet the wellness competency requirement as part of the university's general education core and to graduate. The purpose of this course is to introduce students to the dimensions of wellness (physical exercise, physical nutrition, mental, social, spiritual, intellectual, environmental, occupational and financial), to assist the student in determining his or her own overall "wellness level" by understanding balance and activity/inactivity in each dimension and to provide opportunities for weekly physical activity. Teaching methods for this level include lecture, online and written

activities/assignments, interactive classroom discussions, content-expert guest speakers and health and exercise activities. Two examinations covering the varying dimensions of wellness are given at the midpoint and conclusion of the semester.

CHAPTER THREE: METHODOLOGY

3.1 Methodology

The methodology and all of its components discussed within this chapter were submitted to the Institutional Review Board (IRB) for review. Upon IRB approval, the research study commenced using the methodological components described in the following sections: Participants, Materials and Measures, Procedures, and Research Design/Data Analysis.

3.2 Participants

Convenience sampling was used as the sampling method in this study due to the nature of the specific NCAA Division II SA target population of interest, the access given to the researcher to recruit from a sample of over 550 SAs at the University of Indianapolis (UIndy), and due to this sampling method being considered conducive for exploratory stages of pilot studies such as this study. The total NCAA Division II SA population has been approximated to be at 119,000 SAs (NCAA, 2016d). Therefore, a total sample size of at least 383 NCAA Division II SAs at a 95% confidence level and a 5% precision level was needed in order to achieve a representative sample size since the approximate population was known (The Research Advisors, 2006). Appropriate a priori power analyses were completed for each research aim and analysis type and discussed in the Research Design/Data Analysis section.

Inclusion criteria for this study included all NCAA Division II SAs on the following UIndy athletic teams: men's football, women's volleyball, men's and women's swimming and diving, men's and women's soccer, men's and women's cross country, men's and women's basketball, men's wrestling, women's softball, men's baseball, men's and women's tennis, men's and women's golf, men's and women's track & field and men's and women's lacrosse teams. Exclusion criteria were defined as individuals who were UIndy students but were not current members of the aforementioned UIndy athletic teams and individuals who were former UIndy SAs. Age criterion and age verification involved UIndy SAs who satisfy an age eligibility of at least 18 years of age preventing the enrollment of minors in the research study. In addition,

English was the only eligible language. All UIndy SAs were required to take the paper-based Test of English as a Foreign Language (TOEFL) or demonstrate a recent TOEFL score of 500 or higher for English proficiency. A TOEFL score of 500 or higher indicated that individuals showed proficiency in English and were able to understand the surveys/questionnaires that were administered to these SA participants.

The researcher recruited SA participants with possibilities of varying demographic and historical characteristics and, yet, were representative of the collegiate SA population the researcher was interested in studying. The researcher collected demographic and historical information from the SA participants, as discussed further in the Materials and Measures section, in order to ensure a representative sample. All SAs from each of the UIndy athletic teams received the same opportunity to participate as any other athlete on their team, regardless of demographic and historical characteristics (e.g., age, sex, sport type, nationality, class standing, GPA, etc.).

Participants were recruited from one small, private Midwestern university's 21 NCAA Division II sports teams (N = 544). Overall, NCAA Division II SAs (97%; n_{total} = 530; n_{males} = 355, $n_{females}$ = 175) with an age range of 18 to 23 (M = 19.40, SD = 1.33) representing all 21 athletic teams voluntarily participated in the study (Volleyball n = 15; Men's Soccer n = 29; Women's Soccer n = 27; Men's Cross Country n = 15; Women's Cross Country n = 14; Football n = 112; Men's Basketball n = 13; Women's Basketball n = 14; Wrestling n = 17; Men's Swimming & Diving n = 29; Women's Swimming & Diving n = 28; Softball n = 23; Baseball n = 54; Men's Golf n = 11; Women's Golf n = 10; Men's Tennis n = 10; Women's Tennis n = 11; Men's Track & Field n = 27; Women's Track & Field n = 24; Men's Lacrosse n = 22; Women's Lacrosse n = 23).

The sample was split between interactive SAs (53%) and coactive SAs (47%) with an interactive SA (n_{males} = 207, $n_{females}$ = 76) and a coactive SA (n_{males} = 148, $n_{females}$ = 99) composition. See Table 3.1 for descriptive statistics regarding sex and interactive/coactive sports

by team. The majority of the sample was self-reported as being United States citizens (89%) (6% preferred not to answer) and were comprised of freshmen (n = 191), sophomores (n = 129), juniors (n = 106) and seniors (n = 104). A greater part of the SA sample (81%) indicated that their respective head coach was male, and approximately 51% of SAs self-identified as being a starter in games or competitions with 70% of SA participants self-reporting as a non-first year collegiate athlete.

Table 3.1

Sex and sport type characteristics of SA sample

	Total by Sport	
Sport	*Male (n = 355)*	*Female (n = 175)*
Volleyball[a]	N/A	15
Soccer[a]	29	27
Cross Country[b]	15	14
Football[a]	112	N/A
Basketball[a]	13	14
Wrestling[b]	17	N/A
Swimming & Diving[b]	29	28
Softball[a]	N/A	23
Baseball[a]	54	N/A
Golf[b]	10	11
Tennis[b]	11	10
Track & Field[b]	27	24
Lacrosse[a]	22	23

[a]*Interactive SAs (n = 283)*

[b]*Coactive SAs (n = 247)*

Of those who responded, slightly over half (58%) of the SAs self-reported having either a partial or full athletic scholarship, 68% of the SAs self-reported a grade point average at or above 3.01 and only 11% identified as being a first generation college student. In addition, 33% of SAs had previously completed a 15-week multi-dimensional wellness course (n_{males} = 103, $n_{females}$ = 72) while the remaining 67% of SAs had not yet completed this course (n_{males} = 219, $n_{females}$ =

136). See Table 3.2 for descriptive statistics regarding which SAs have completed the wellness course versus those who have not by sex.

Table 3.2

Wellness course completion status of SA sample by sex

	Wellness Course Completion	
	Yes	*No*
Sex	*(n = 355)*	*(n = 175)*
Male	219	103
Female	136	72

3.3 Materials and Measures

The researcher utilized survey-based methods to collect data from the participants in the aforementioned SA sample. Those SAs who agreed to participate in the study after listening to the read aloud script as discussed in the procedures section below read and signed the IRB-approved informed consent form. Next, they were asked to complete the paper-based and self-report Sport Motivation Scale II (SMS II) (Pelletier, Rocchi, Vallerand, Deci & Ryan, 2013) at three time points (i.e., pre-season, in-season, off-season) and the Multi-Dimensional Wellness Inventory (MDWI) (Mayol, Schreiber, & Scott, 2017; Scott, Mayol, & Schreiber, 2013) and demographics/historical questionnaire at one time point (i.e., pre-season for fall and winter sports and off-season for spring sports).

The 18-item SMS II is designed to measure six motivation types: intrinsic (IR), integrated (INTR), identified (IDR), introjected (INT), external (EXT), and amotivated (AMR) regulation on a 7-point Likert-type scale (1 = Does not correspond at all to 7 = Corresponds exactly) with summed construct scores ranging from three to 21. High scores are indicative of the type or source of motivation for which that individual most loads on and uses while participating in their sport during the pre-season, in-season and off-season. Higher scores in IR, INTR, and IDR are indicative of more autonomous and self-determined motivation whereas higher scores in ITR,

EXTR, and AMR are indicative of less autonomous and self-determined motivation. Past confirmatory factor analyses, a validation modeling technique, revealed that the 18-item, six-factor model was statistically significant ($\chi^2(120, N = 290) = 258.14, p < 0.001$) and the fit of the model was satisfactory to very good (RMSEA = 0.07; RMSEA 90% CI = 0.05 - 0.08; CFI = 0.94; NFI = 0.90; TLI = 0.92) (Pelletier et al., 2013). Reliability analyses using Cronbach's alpha used in previous research yielded satisfactory internal reliability scores (α scores ranging from .70 to .88) for each of the SMS II constructs (Pelletier et al., 2013). For this study, reliability analyses also using Cronbach's alpha also yielded satisfactory internal reliability scores ranging from .72 to .92 for each of the SMS II constructs. See Appendix A, labeled Survey #1.

The 45-item MDWI is designed to measure one's perceived behavior with respect to their personal wellness orientation within nine dimensions consisting of five questions per dimension that are summed to create nine single wellness constructs: physical wellness exercise (PWE), physical wellness nutrition (PWN), mental (MW), social (SW), spiritual (SPW), intellectual (IW), environmental (EW), occupational (OW), and financial (FW). Each question is measured on a 4-point Likert-type scale (1 = Does not describe me at all to 4 = Absolutely describes me); thus, summed construct scores range between five and 20. Higher scores are indicative of higher levels of wellness and engagement in those respective dimensions. Past confirmatory factor analyses, revealed that the fit of the MDWI was satisfactory ($\chi2(287, N = 887) = 1052.81$; RMSEA = 0.57 (.054, .061), CFI = 0.92), and SRMR (.045) (Mayol, Schreiber, & Scott, 2017; Scott et al., 2014). For this study, reliability analyses using Cronbach's alpha yielded satisfactory internal reliability scores ranging from .68 to .73 for each of the MDWI constructs. See Appendix B, labeled Survey #2.

The 28-item demographics/historical questionnaire used in this study asked questions to the SA participants as it related to demographic and historical-based characteristics to ensure a representative sample as well as to capture potential connections and relationships as stated in the presented research aims in Chapter 1. See Appendix C, labeled Survey #3.

3.4 Procedures/Data Collection

To begin the process of recruiting SAs, an IRB research study application was put forth that included a letter of agreement between the stakeholders (e.g., institution's head athletic director) and the researcher complete with signatures and dates and, upon IRB approval, the research study commenced. The first step in the study was the recruitment of participants.

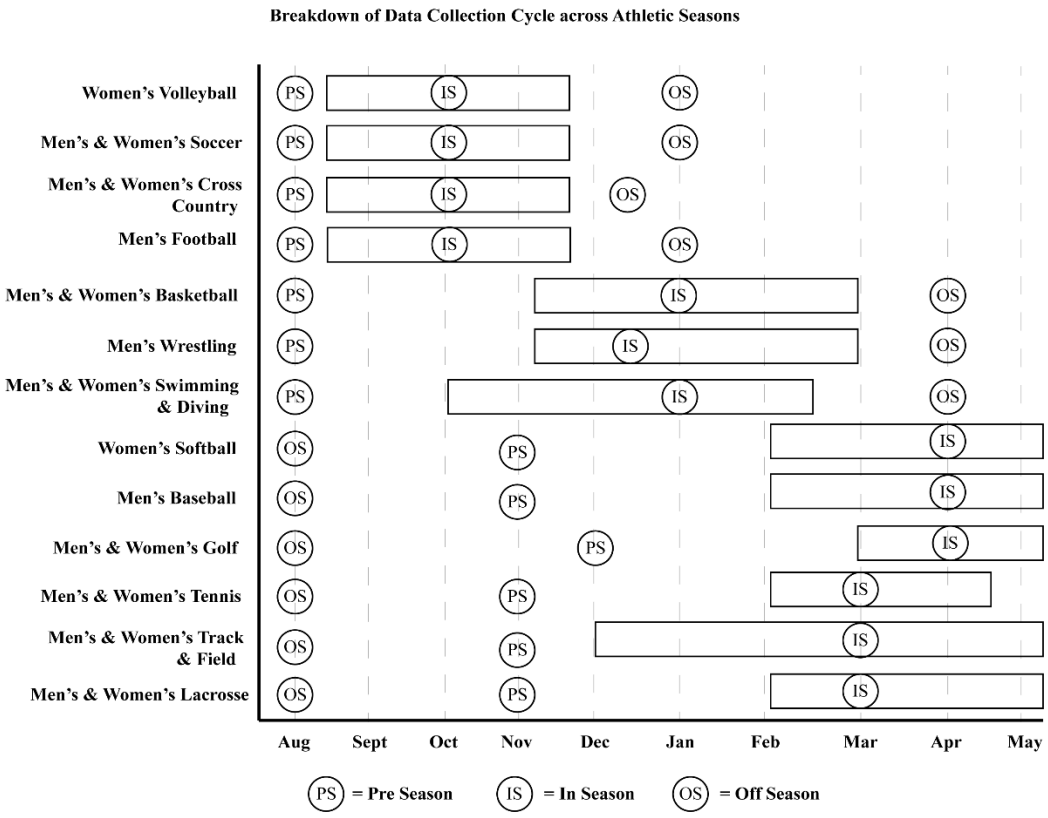
Initially, the researcher contacted coaches from UIndy's men's football, women's volleyball, men's and women's swimming and diving, men's and women's soccer, men's and women's cross country, men's and women's basketball, men's wrestling, women's softball, men's baseball, men's and women's tennis, men's and women's golf, men's and women's track & field and men's and women's lacrosse via email for permission to meet with their SAs three times over the next academic year: before any scheduled practices (pre-season), in the middle of their season (in-season), and at the end of their season (off-season). See Appendix D for the email recruitment letter. No emails directed toward SAs were used in this study.

A next step was to determine a data collection schedule. Upon receiving permission from each team's head coach, the researcher met with the team of SAs on the agreed upon day, time and location for the first data collection time point which was held in a private room setting. The researcher asked every coach and/or assistant coach to leave the room before discussing the study and until the last participant finished completing the surveys. The coaches had no knowledge who participated in the study and who did not participate in the study in order to account for minimization of risks of coercion, exploitation or undue influences during recruitment and data collection regarding their respective athletic team coaching staff.

Fall sports included men's football, women's volleyball, men's and women's swimming and diving, men's and women's soccer, and men's and women's cross country. Winter sports included men's and women's swimming and diving, men's and women's soccer, men's and women's cross country, men's and women's basketball, and men's wrestling. Spring sports included women's softball, men's baseball, men's and women's tennis, men's and women's golf,

men's and women's track and field, and men's and women's lacrosse. The data collection timeline for PS, IS and OS (as seen in circles below) as well as the length of each sports' respective athletic season (represented by the rectangles below) sports were as indicated in Table 3.3.

Table 3.3



During the first data collection time period, the researcher used an IRB-approved, read aloud, informational script, distributed the informed consent form inviting the SAs to read through this form, asked SAs if they have questions that need clarified, and informed the SAs that they had the opportunity to participate in this research study. In addition, the researcher identified potential risks and benefits to participating in the study as well as how the data was to be kept confidential. The researcher also stated to the SAs that participation in the study was 100% voluntary and that they had the right to cease their participation at any time. See Appendix E for

further details on the informational script and Appendix F for details on the informed consent form and associated language.

All SAs received an IRB approved informed consent form outlining their participation in the project and were asked to sign, date and return the form in order to consent to participation in the study. In order to protect any undue risks by having SAs publicly identify themselves as unwilling to participate, all SAs received the informed consent and surveys. Thus, all students received and returned the surveys, whether or not they had completed them during all three time points. This was put into place to reduce possible public exposure around their SA peers related to an unwillingness (or willingness) to participate. SAs who do not wish to participate were asked to work or use their device quietly for approximately 20-30 minutes while the other participating SAs completed the surveys. Therefore, no SA left the room until the last SA finished completing the surveys. The time commitment of the first data collection was approximately 20-30 minutes as follows (in order):

a. Informational Script for First Data Collection (2 minutes)
b. Informed consent process (5-10 minutes)
c. SMS II (3 minutes)
d. MDWI (5 minutes)
e. Demographic/Historical survey (5-10 minutes)

For the second and third data collection time points, the researcher contacted the team's head coach to schedule a second and third data collection at an agreed upon day, time and location. The researcher read a modified informational script for the second and third data collection time points as SA participants would have previously given consent to participate in the study. For those SAs who voluntarily decided to participate in the study during either the second or third data collection time point, the researcher worked with them individually to have them complete the informed consent form and the additional MDWI Demographics/Historical Questionnaire measures if the SA(s) agreed. See Appendix G for further details for the modified

script. The time commitment of the second and third data collections was approximately five minutes as follows (in order):

a. Informational Script for Subsequent Data Collections (2 minutes)
b. SMS II (3 minutes)

As discussed in Appendix F, each SA had their name linked with an identification number where each set of surveys were associated with their specific identification number only and not their name. Identification numbers were randomly generated. The purpose of having the identification numbers linked to their name was to be able to connect the data over the three time points for the SMS II surveys (i.e., pre-season, in-season, off-season). Confidentiality and privacy measures relating to collection and transportation of data included placing surveys, once completed, into one manila envelope and sealed while the informed consent forms were placed in a separate envelope and sealed before leaving the private meeting room. Additional data protection measures involved the researcher keeping all data and surveys collected by the researcher in a locked file cabinet. The informed consent forms, identification numbers and SA name key were also kept in a separate locked file cabinet. The key linking the names and the identification numbers were saved on the researcher's password-protected computer. The Microsoft® Excel® and IBM Statistical Package for the Social Sciences for Windows (SPSS) files where survey data was entered and analyzed was also encrypted. Upon study completion or study termination, the key, the hard copies of the surveys and the informed consent forms were destroyed via a paper shredder.

3.5 Research Design and Data Analyses

For this survey-based study, a longitudinal research design was, first, employed to examine SA sport motivation types (i.e., intrinsic motivation, integrated regulation, identified regulation, introjected regulation, external regulation, amotivation) over three time points (i.e., pre-season, in-season, off-season) while investigating differences between team type (i.e., individual, team) and athletes' reported sex (i.e., male, female). Second, a cross-sectional

research design was employed to assess nine multi-dimensional wellness dimensions in SAs (i.e., physical-exercise, physical-nutrition, mental, social, spiritual, intellectual, environmental, occupational, and financial) during one time point while also investigating differences for athletes' reported sex (i.e., male, female). Lastly, a quasi-experimental design was employed to examine differences in the aforementioned nine wellness dimensions between SAs who have previously completed a multi-dimensional wellness course versus those SAs who have not.

Microsoft® Excel® was used as the initial database to enter all of the data collected from SAs over the three time points. All statistical analyses used IBM SPSS (23.0 Edition; SPSS Inc., Chicago, Il., USA) to answer the following research aims and associated hypotheses with an alpha level of $p \leq 0.05$ set for statistical significance. For reference, the study's research aims and hypotheses were:

1. To examine changes in six sport motivation types over three time points (pre-season, in-season, off-season) in SAs and investigate differences for team type (coactive, interactive) and for athletes' reported sex (male, female).

   Research Hypothesis 1a: There are statistically significant differences in sport motivation types in the collective SA sample over time (i.e., pre-season, in-season, off-season).

   Research Hypothesis 1b: There are statistically significant interactions in sport motivation types between coactive and interactive sport-based SAs over time (i.e., pre-season, in-season, off-season).

   Research Hypothesis 1c: There are statistically significant interactions in sport motivation types between male and female SAs for the over time (i.e., pre-season, in-season, off-season).

2. To assess for differences in nine multi-dimensional wellness dimensions between athletes' reported sex (male, female) and between SAs who have

completed a multi-dimensional wellness course versus those SAs who have not.

Research Hypothesis 2a: There are statistically significant interactions in wellness dimensions between male and female SAs and those who completed a college multi-dimensional wellness course versus SAs who have not.

Research Hypothesis 2b: There are no statistically significant differences in multi-dimensional wellness levels between male and female SAs.

Research Hypothesis 2c: There are statistically significant differences between SAs who completed a college multi-dimensional wellness course versus SAs who have not.

To begin the data analysis process, descriptive statistics and frequencies were calculated for the demographic/historical variables to illustrate SA sample characteristics which can be viewed in the Participants section of this chapter. In addition, reliability analyses were run to report a Cronbach's alpha score for the six constructs of the SMS II and the nine constructs of the MDWI and were discussed in the Materials/Measures section of this chapter.

3.5.1 Research Aim #1

For Research Aim #1, a one-way, repeated measures ANOVA and a 2 x 2 x 3 Mixed Analysis of Variance (ANOVA) design along with Bonferroni post hoc analyses with correction for alpha inflation were performed to examine sport motivation type (intrinsic motivation, integrated regulation, identified regulation, introjected regulation, external regulation, amotivation) differences in the collective SA sample and to assess for differences between team type (interactive, coactive) and athletes' reported sex (male, female) over three time points (pre-season, in-season, off-season).

In essence, the team type (interactive, coactive) x athletes' reported sex (male, female) x time (pre-season, in-season, off-season) Mixed ANOVA design was able to provide a perspective

on interactions between these variables. If a statistically significant main effect was demonstrated, this indicated that a specific independent variable (i.e., team type, sex, time) showed an effect on a dependent variable (i.e., sport motivation type) disregarding the effects of other independent variables (Mendenhall, Beaver, & Beaver, 2013). If a statistically significant interaction was shown, this indicated that a statistical interaction had transpired due to the effect of how one independent variable (i.e., team type, sex, time) on the dependent variable (i.e., sport motivation type) becomes modified depending on the level of another independent variable (i.e., team type, sex, time) (Mendenhall, Beaver, & Beaver, 2013). An a priori power analysis for Research Aim #1 using G*Power 3.0.10 (Faul, Erdfelder, Lang, & Buchner, 2007) was completed attuned with Cohen's (1988) effect sizes measures and determined that at least 352 participants was needed to achieve 95% power (small effect size, $f = .10$; $\alpha \leq .05$) for the 2 x 2 x 3 Mixed ANOVA design to address the research aim appropriately. The total SA sample for this study was 530 which met the criteria for using this type of analysis.

Specifically for Research Aim 1a, a one-way, repeated measures ANOVA was performed to examine within-subjects differences in six sport motivation types in the collective SA sample over the three time points (pre-season, in-season, off-season. For Research Aim 1b and 1c, a 2 x 2 x 3 Mixed ANOVA design was used to give the researcher the capacity to understand if interactions or main effects resulted for team type (interactive, coactive) x sex (male, female) x time (pre-season, in-season, off-season) as it related to the six sport motivation types. In the cases where the assumption of sphericity was violated, either a Huynh-Feldt correction was used when $\varepsilon > .75$ or a Greenhouse-Geisser correction was used when $\varepsilon < .75$. Via an adjustment made in SPSS, pair-wise post hoc analyses with Bonferroni correction for alpha inflation were used for Research Aims 1a, 1b and 1c to determine the precise *p* value taking into account the multiple comparisons being performed.

3.5.2 Research Aim #2

For research Aim #2, a 2 x 2 factorial multivariate ANOVA (MANOVA) was employed to assess for differences in nine wellness dimensions (physical-exercise, physical-nutrition, mental, social, spiritual, intellectual, environmental, occupational, and financial) between athletes' reported sex (male, female) and SA wellness course history (completion of course, non-completion of course).

For Research Aim #2, the athletes' reported sex (male, female) x SA wellness course history (completion of course, non-completion of course) factorial MANOVA assessed for interactions and differences between these variables in the nine wellness dimensions. If a statistically significant main effect was shown, this indicated that a specific independent variable (i.e., sex, wellness course history) had shown an effect on a dependent variable (i.e., wellness dimension) disregarding the effects of the other independent variable (Mendenhall, Beaver, & Beaver, 2013). If a statistically significant interaction was demonstrated, this indicated that a statistical interaction had occurred due to the effect of how one independent variable (i.e., sex, wellness course history) on the dependent variable (i.e., wellness dimension) becomes changed depending on the level of another independent variable (i.e., sex, wellness course history) (Mendenhall, Beaver, & Beaver, 2013). An a priori power analysis (G*Power 3.0.10, Faul, et al., 2007) for Research Aim #2 determined that the study would need at least 124 participants to achieve 95% power (small effect size, $f^2(V) = .10$; $\alpha \leq .05$) for the analysis to address the research aim appropriately. The total SA sample for this study was 530 which met the criteria for using this type of analysis.

For research hypothesis aim 2a, a 2 x 2 MANOVA design was used to give the researcher the capacity to understand if interactions resulted for sex (male, female) x wellness course history (completion, non-completion) as it related to the nine wellness dimensions. A Box's test of equality of covariance, Box's M , was used to examine the homogeneity of the covariance matrices and Bartlett's test of sphericity was used to examine the correlations between

the variables. For Research Aim 2b and 2c, the MANOVA results was used to determine if univariate main effects existed for sex (male, female) and for wellness course history (completion, non-completion) and the means were examined to understand the differences in wellness scores between the two groups.

CHAPTER FOUR: RESULTS

Study findings including graphic representations are presented within this chapter in the following sections: Research Aim 1 and Research Aim 2. Research Aim 1 examined six sport motivation types [intrinsic motivation (IR), integrated regulation (INTR), identified regulation (IDR), introjected regulation (INT), external regulation (EXTR), and amotivation (AMR)] over three time points [pre-season (PS), in-season (IS), off-season (OS)] in student-athletes (SAs) and investigated for statistical interactions between team type (coactive, interactive) and for athletes' reported sex (male, female).

Research Aim 2 assessed for differences in nine multi-dimensional wellness dimensions [physical wellness exercise (PWE), physical wellness nutrition (PWN), mental (MW), social (SW), spiritual (SPW), intellectual (IW), environmental (EW), occupational (OW) and financial (FW)] and also investigated for statistical interactions between athletes' reported sex (male, female) and between SAs who have completed a multi-dimensional wellness course versus those SAs who have not (completion of course, non-completion of course).

4.1 Research Aim 1

4.1.2 Research Aim 1a

Research Aim 1a stated that there were statistically significant differences in sport motivation types in the collective SA sample over three time points. The findings found below are organized by sport motivation type in this order: IR, INTR, IDR, INT, EXTR, AMR. Results from six, one-way repeated measures Analyses of Variance (RMANOVA) demonstrated statistically significant differences in four of the six sport motivation types (IR, INTR, IDR, and AMR). See Table H.1 and Table H.2 in Appendix H for more detailed RMANOVA results and for Bonferroni corrected post hoc results for Research Aim 1a.

For IR, a statistically significant difference was seen over time, with sphericity assumed, $F(2, 710) = 3.66$, $p = .026$. Post hoc analysis revealed that a statistically significant difference was seen specifically between the PS and IS ($p = .028$) with lower scores occurred during the IS ($M = 16.11$, $SD = 4.21$) than when compared with the scores in the PS ($M = 16.67$, $SD = 4.13$).

For INTR, statistically significant differences were seen over time with sphericity not assumed ($\varepsilon = .974$), $F(1.95, 691.39) = 15.75$, $p < .001$, between both the PS and IS ($p < .001$) and between the PS and OS ($p < .001$) with lower scores occurring in the IS ($M = 16.69$, $SD = 3.69$) and OS ($M = 16.53$, $SD = 4.05$) versus higher scores occurring in the PS ($M = 17.58$, $SD = 3.29$).

For IDR, a statistically significant difference was seen scores over time with sphericity not assumed ($\varepsilon = .958$), $F(1.92, 680.47) = 5.89$, $p = .003$. Post hoc analysis revealed that a statistically significant difference was seen specifically between the PS and IS ($p = .004$) with lower scores occurring during the IS ($M = 16.43$, $SD = 4.09$) than when compared with the scores of the PS ($M = 17.12$, $SD = 3.62$).

However, no statistically significant differences were seen for ITR between the three time points $F(1.93, 684.04) = .828$, $p = .434$. For EXTR, a statistical significance difference was demonstrated over time with sphericity not assumed ($\varepsilon = .976$), $F(1.95, 693.09) = 3.07$, $p = .048$. While EXTR post hoc scores between the PS and OS were seen to be tending toward significance ($p = .055$), this result was not statistically significant. The post hoc analysis also did not indicate statistically significant differences between any other time points ($p > .05$).

For AMR, statistically significant differences were seen over time with sphericity not assumed ($\varepsilon = .986$), $F(1.97, 699.89) = 8.21$, $p < .001$, between both the PS and IS ($p < .001$) and between the PS and OS ($p < .001$) with higher scores occurring in the IS ($M = 7.82$, $SD = 4.31$) and OS ($M = 7.78$, $SD = 4.73$) versus lower scores occurring in the PS ($M = 6.93$, $SD = 4.11$).

See *Figure 4.1* on the following page for differences in sport motivation scores over time for the collective SA sample.

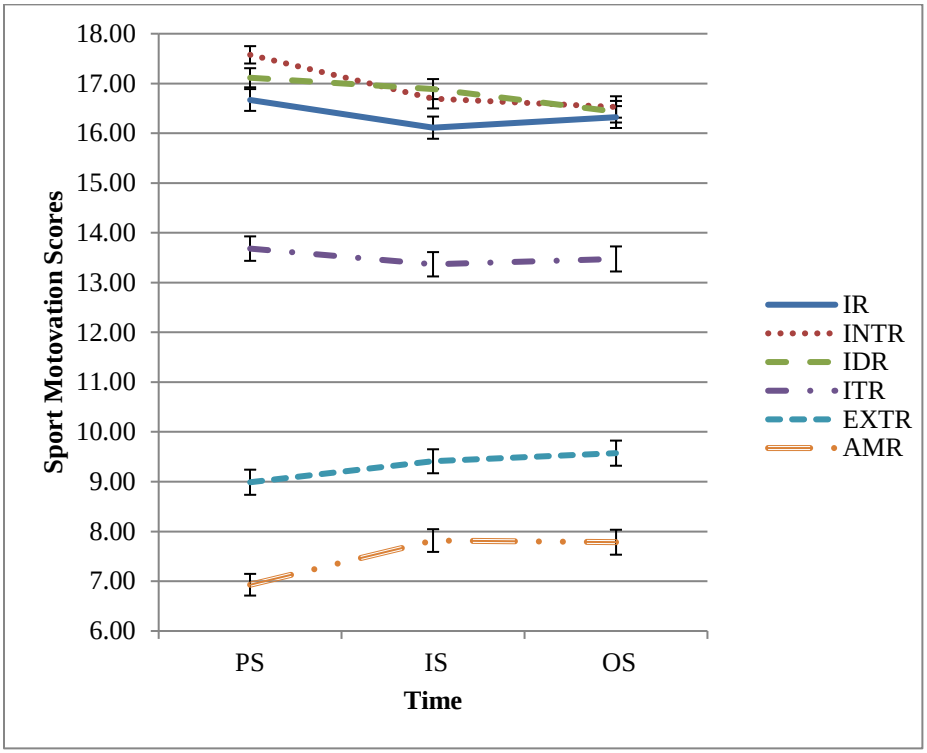


Figure 4.1. Means and standard errors of sport motivation scores for intrinsic regulation (IR), integrated regulation (INTR), identified regulation (IDR), introjected regulation (ITR), external regulation (EXTR), and amotivation (AMR) over the pre-season (PS), in-season (IS) and the off-season (OS) for the collective student-athlete sample.

4.1.3 Research Aims 1b and 1c

Research Aim 1b and 1c stated that there were statistically significant interactions in sport motivation types between coactive and interactive sport-based SAs and between male and female SAs over three time points. The findings found below are organized by sport motivation type (in this order: IR, INTR, IDR, INT, EXTR, AMR) and includes results for both the second and third research aims. Results from the six 2x2x3 Mixed ANOVA performed [team type (coactive, interactive) x athletes' reported sex (male, female) x time (PS, IS, OS)] in sport motivation types showed statistically significant interactions for IR, INTR, IDR and AMR. See Table H.3 in Appendix H for more detailed 2x2x3 Mixed ANOVA results; Tables H.4 and H.5 in Appendix H for descriptive statistics and post hoc results for both Research Aims 1b and 1c.

Intrinsic Regulation (IR). Two statistically significant interactions were seen, with sphericity assumed, seen between team type and time, $F(2, 704) = 6.19$, $p = .002$, and between athletes' reported sex and time, $F(2, 704) = 6.19$, $p = .002$. Two simple main effects for team type and time revealed by post hoc analyses were demonstrated.

First, a simple main effect for team type and time revealed by post hoc analyses was demonstrated statistically. Significant differences were seen in the IS, $F(1, 352) = 8.96$, $p = .003$, with coactive SAs scoring higher in IR ($M = 16.67$, $SD = 4.11$) than interactive SAs ($M = 15.65$, $SD = 4.33$). Second, statistically significant differences were seen in the OS, $F(1, 352) = 4.87$, $p = .028$, with coactive SAs possessing higher IR scores in the OS ($M = 16.81$, $SD = 3.84$) when compared to interactive SAs ($M = 16.17$, $SD = 4.25$).

In addition, a second simple main effect for athletes' reported sex and time revealed by post hoc analyses was demonstrated. Statistically significant differences were seen in the OS, $F(1, 352) = 4.22$, $p = .041$), with males SAs scoring higher in IR ($M = 16.78$, $SD = 3.93$) than female SAs ($M = 15.94$, $SD = 4.26$). No other statistically significant differences were seen for IR.

See *Figure 4.2 and 4.3* on the following page for differences in IR scores over time for team type and for athletes' reported sex.

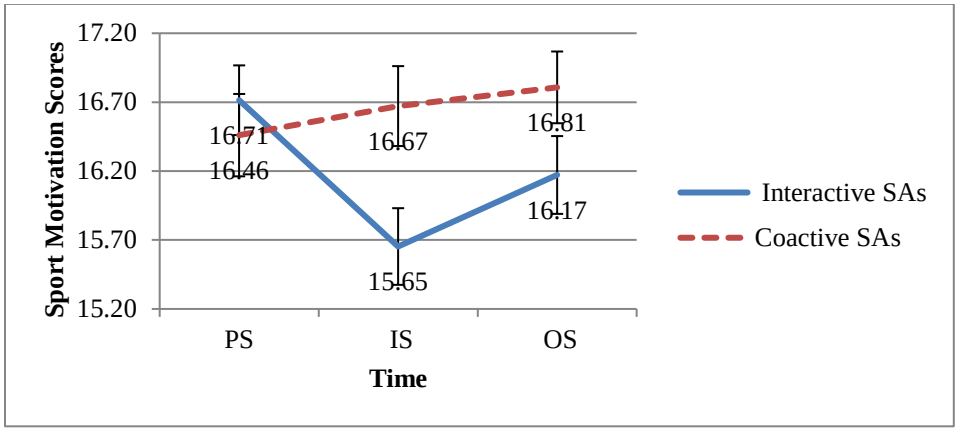


Figure 4.2. Means and standard errors of sport motivation scores for intrinsic regulation (IR) over the pre-season (PS), in-season (IS), and the off-season (OS) for interactive and coactive student-athletes (SAs).

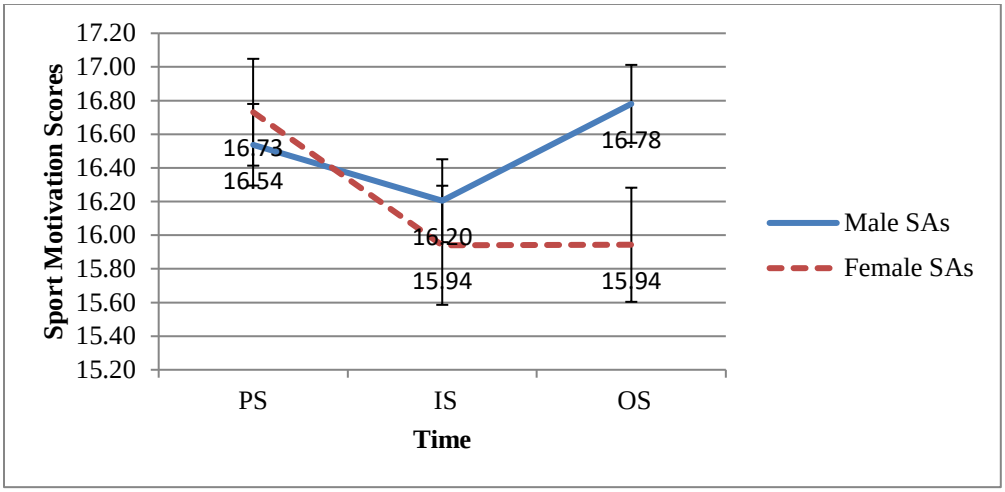


Figure 4.3. Means and standard errors of sport motivation scores for intrinsic regulation (IR) over the pre-season (PS), in-season (IS), and the off-season (OS) for male and female student-athletes (SAs).

Integrated Regulation (INTR). Two statistically significant interactions were seen, with sphericity not assumed ($\varepsilon = .981$), between team type and time, $F(1.96, 690.66) = 3.36$, $p = .036$, and between athletes' reported sex and time, $F(1.96, 690.66) = 6.87$, $p = .001$.

First, a simple main effect for team type and time revealed by post hoc analyses was demonstrated. Statistically significant differences were seen in the OS, $F(1, 352) = 7.44$, $p = .007$, with coactive SAs scoring higher in INTR ($M = 17.10$, $SD = 3.49$) than interactive SAs ($M = 16.30$, $SD = 4.25$).

In addition, a second simple main effect for athletes' reported sex and time revealed by post hoc analyses was demonstrated. Statistically significant differences were seen in the OS, $F(1, 352) = 10.77$, $p = .001$, with males SAs scoring higher in INTR ($M = 17.14$, $SD = 3.59$) than female SAs ($M = 15.87$, $SD = 4.33$). No other statistically significant differences were seen for INTR.

See *Figure 4.4* and *Figure 4.5* on the following page for differences in INTR scores over time for team type and for athletes' reported sex.

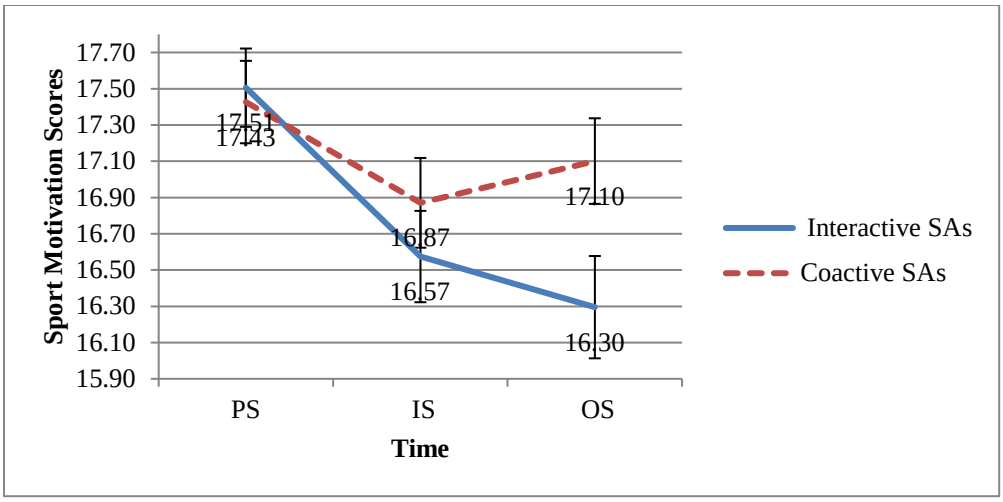


Figure 4.4. Means and standard errors of sport motivation scores for integrated regulation (INTR) over the pre-season (PS), in-season (IS), and the off-season (OS) for interactive and coactive student-athletes (SAs).

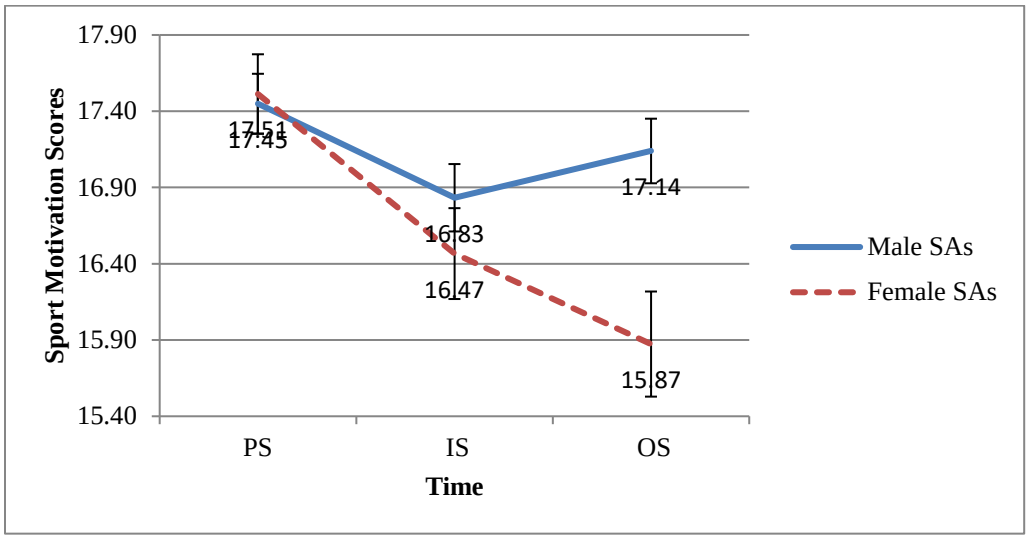


Figure 4.5. Means and standard errors of sport motivation scores for integrated regulation (INTR) over the pre-season (PS), in-season (IS), and the off-season (OS) for male and female student-athletes (SAs).

Identified Regulation (IDR). One statistically significant interaction was seen, with sphericity not assumed ($\varepsilon = .961$), between team type and time, $F(1.92, 676.79) = 6.21$, $p = .002$.

Two simple main effects for team type and time revealed by post hoc analyses were demonstrated. First, statistically significant differences were seen in the IS, $F(1, 352) = 7.10$, $p = .008$, with coactive SAs scoring higher in IDR ($M = 17.31$, $SD = 4.57$) compared to interactive SAs ($M = 16.60$, $SD = 3.88$). Second, statistically significant differences were seen in the OS, $F(1, 352) = 5.06$, $p = .025$, with coactive SAs possessing higher IDR scores in the OS ($M = 16.82$, $SD = 4.01$) when compared to interactive SAs ($M = 16.16$, $SD = 4.15$).

While no interaction was qualified between athletes' reported sex and time in IDR ($p > .05$), a main effect was seen, with equal variances assumed, for athletes' reported sex, $F(1, 352) = 3.90$, $p = .049$. Post hoc tests demonstrated a statistically significant difference in the OS only between male and female SAs ($p = .030$) where males scored higher in IDR ($M = 16.79$, $SD = 4.00$) when compared to females ($M = 15.92$, $SD = 4.19$). No other statistically significant differences were seen for sex and time for IDR.

See *Figure 4.6* and *Figure 4.7* on the following page for differences in IDR scores over time for team type and for athletes' reported sex.

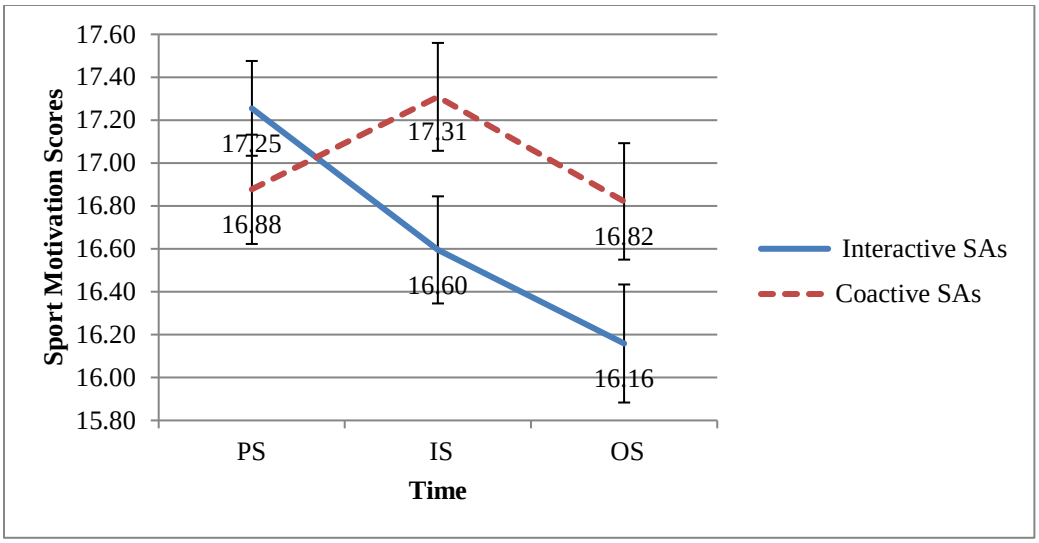


Figure 4.6. Means and standard errors of sport motivation scores for identified regulation (IDR) over the pre-season (PS), in-season (IS), and the off-season (OS) for interactive and coactive student-athletes (SAs).

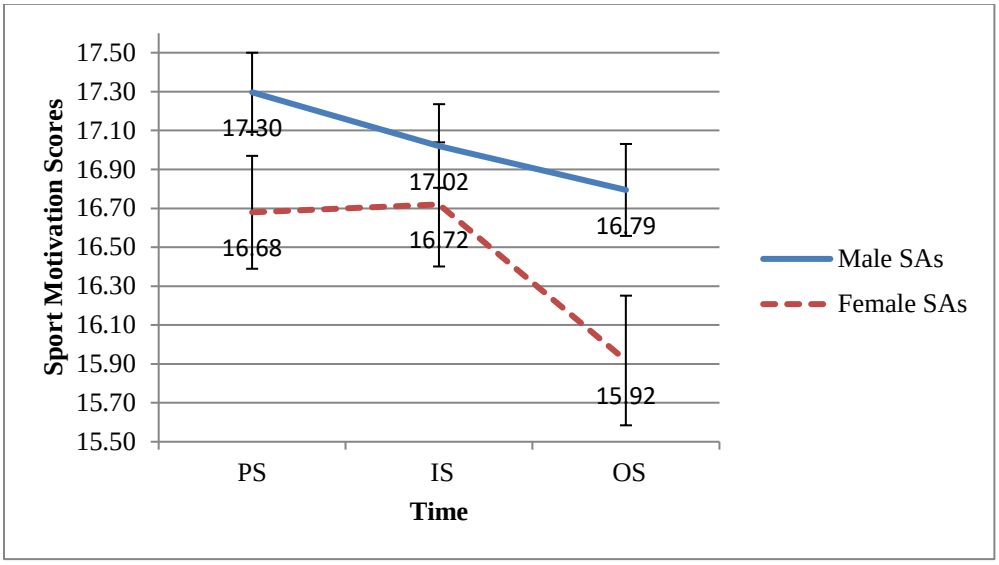


Figure 4.7. Means and standard errors of sport motivation scores for identified regulation (IDR) over the pre-season (PS), in-season (IS), and the off-season (OS) for male and female student-athletes (SAs).

Introjected Regulation (ITR). No statistically significant interactions were demonstrated, with sphericity not assumed ($\varepsilon = .979$), between team type and time, $F(1.93, 679.81) = .404$, $p = .661$, and between athletes' reported sex and time, $F(1.93, 679.81) = 2.83$, $p = .062$.

While no interaction was qualified between team type and time in ITR ($p > .05$), a main effect, with equal variances assumed, was shown for team type, $F(1, 352) = 12.98$, $p < .001$. Post hoc tests demonstrated a statistically significant difference in the PS ($p = .001$), the IS ($p = .002$), and the OS ($p = .018$).

In the PS, higher ITR scores were seen in the coactive SAs ($M = 14.25$, $SD = 4.21$) versus the interactive SAs ($M = 13.02$, $SD = 4.81$). In the IS, higher ITR scores were seen in the coactive SAs ($M = 13.85$, $SD = 4.47$) versus the interactive SAs ($M = 13.04$, $SD = 4.65$). In the OS, higher ITR scores were seen in the coactive SAs ($M = 13.94$, $SD = 4.40$) versus the interactive SAs ($M = 13.06$, $SD = 4.91$). No other statistically significant differences were seen for ITR.

See *Figure 4.8* and *Figure 4.9* on the following page for differences in ITR scores over time for team type and for athletes' reported sex.

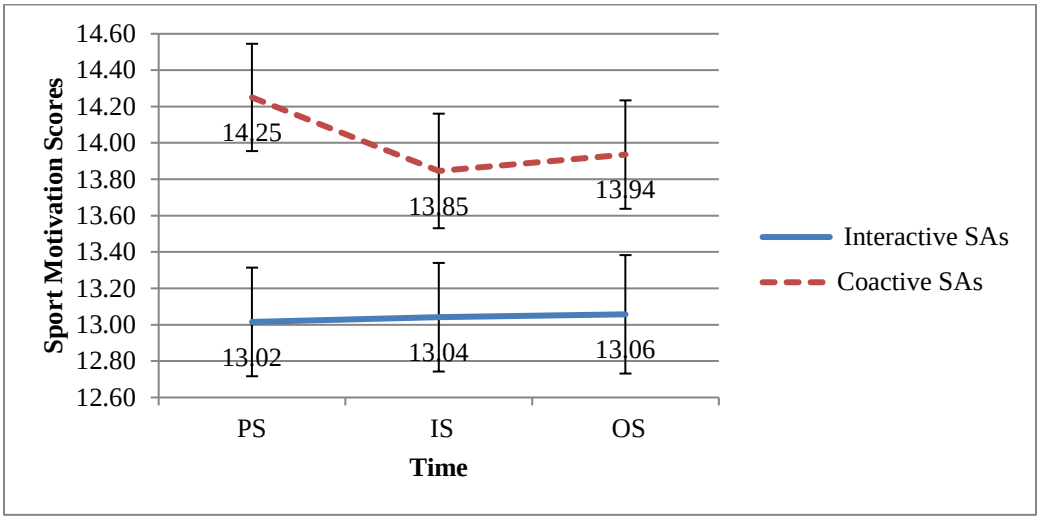


Figure 4.8. Means and standard errors of sport motivation scores for introjected regulation (ITR) over the pre-season (PS), in-season (IS), and the off-season (OS) for interactive and coactive student-athletes (SAs).

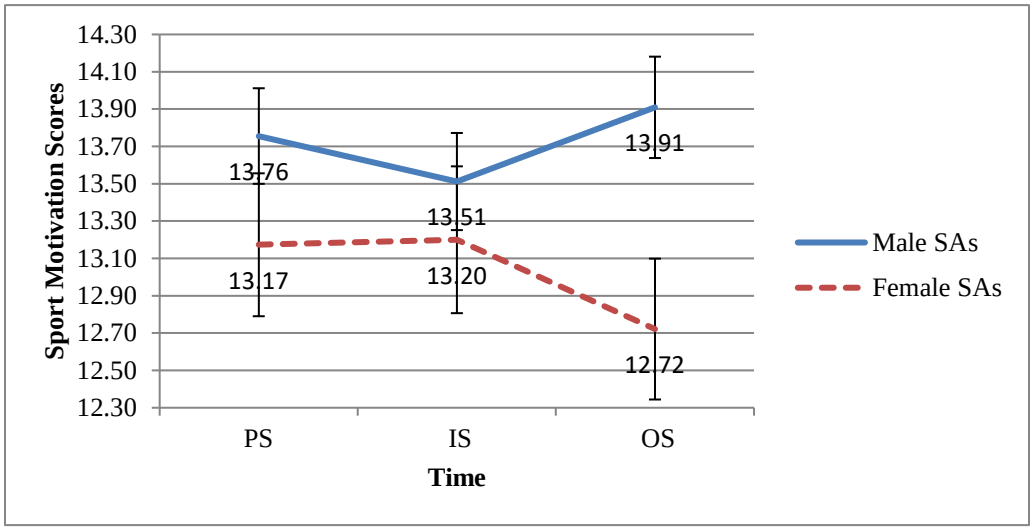


Figure 4.9. Means and standard errors of sport motivation scores for introjected regulation (ITR) over the pre-season (PS), in-season (IS), and the off-season (OS) for male and female student-athletes (SAs).

External Regulation (EXTR). With sphericity not assumed (ε = .984), no statistically significant interactions were qualified between team type and time, $F(1.97, 692.61) = 1.480$, $p = .229$, as well as between athletes' reported sex and time, $F(1.97, 692.61) = .951$, $p = .386$.

Yet, team type x athletes' reported sex x time was tending toward significance ($p = .055$) regarding an interaction between the three independent variables. However, this result was not statistically significant ($p > .05$).

In addition, no other statistically significant main effects were shown for team type ($p > .05$) and athletes' reported sex ($p > .05$) for EXTR.

See *Figure 4.10* and *Figure 4.11* on the following page for differences in EXTR scores over time for team type and for athletes' reported sex.

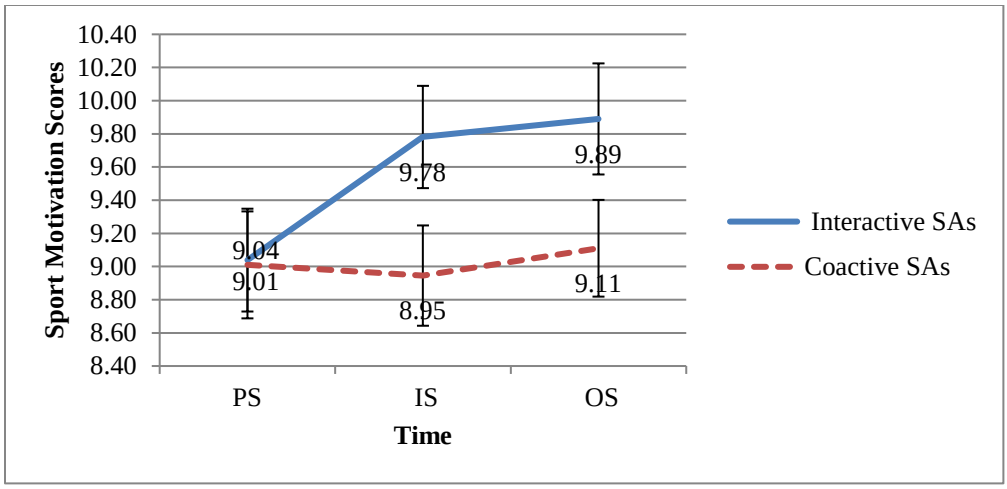


Figure 4.10. Means and standard errors of sport motivation scores for external regulation (EXTR) over the pre-season (PS), in-season (IS), and the off-season (OS) for interactive and coactive student-athletes (SAs).

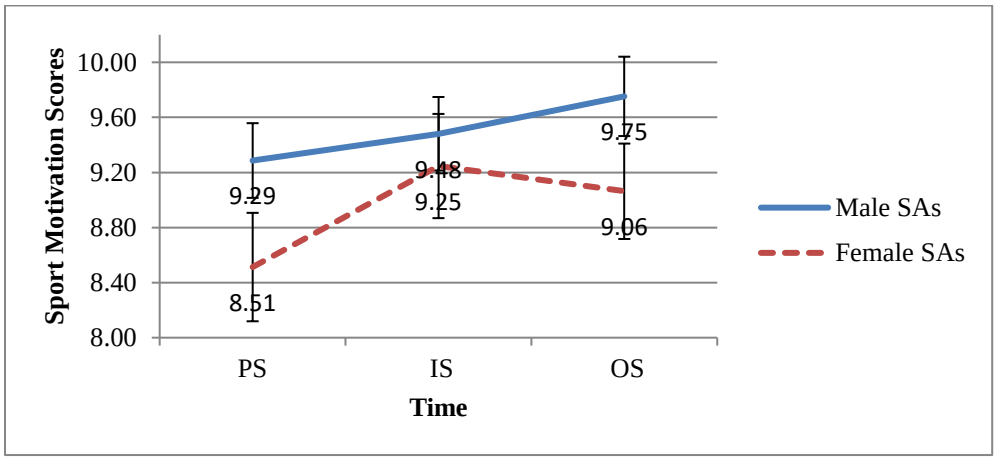


Figure 4.11. Means and standard errors of sport motivation scores for external regulation (EXTR) over the pre-season (PS), in-season (IS), and the off-season (OS) for male and female student-athletes (SAs).

Amotivation (AMR). One statistically significant interaction was seen, with sphericity not assumed ($\varepsilon = .993$), between team type and time, $F(1.96, 699.03) = 4.54$, $p = .011$. Two simple main effects for team type and time revealed by post hoc analyses were demonstrated.

First, statistically significant differences were seen in the IS, $F(1, 352) = 7.63$, $p = .006$, with interactive SAs scoring higher in AMR ($M = 8.51$, $SD = 4.47$) than coactive SAs ($M = 7.32$, $SD = 4.14$). Second, statistically significant differences were seen in the OS, $F(1, 352) = 10.97$, $p = .001$, with interactive SAs possessing higher AMR scores in the OS ($M = 8.38$, $SD = 4.93$) when compared to coactive SAs ($M = 7.05$, $SD = 4.22$).

In addition, no other statistically significant interactions or main effects were shown for athletes' reported sex ($p > .05$) for AMR.

See *Figure 4.12* and *Figure 4.13* on the following page for differences in AMR scores over time for team type and for athletes' reported sex.

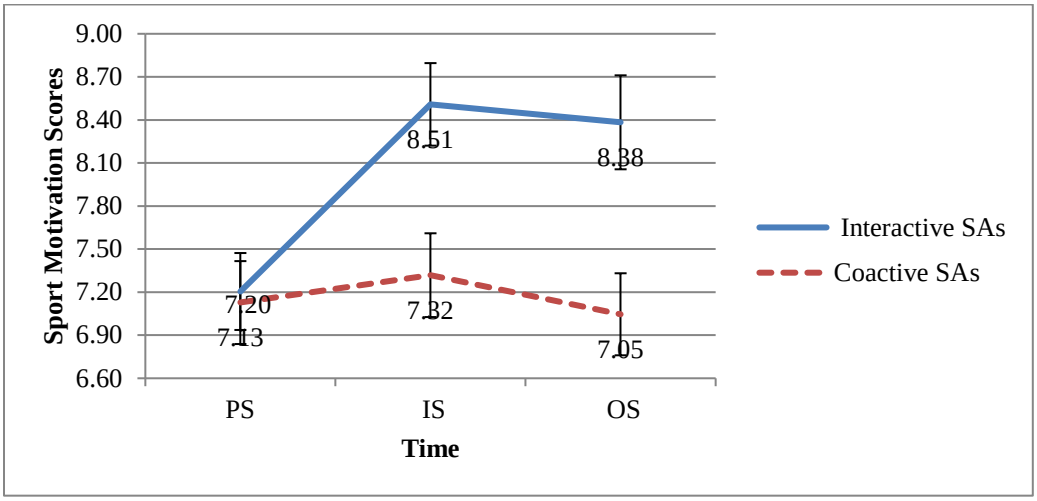


Figure 4.12. Means and standard errors of sport motivation scores for amotivated regulation (AMR) over the pre-season (PS), in-season (IS), and the off-season (OS) for interactive and coactive student-athletes (SAs).

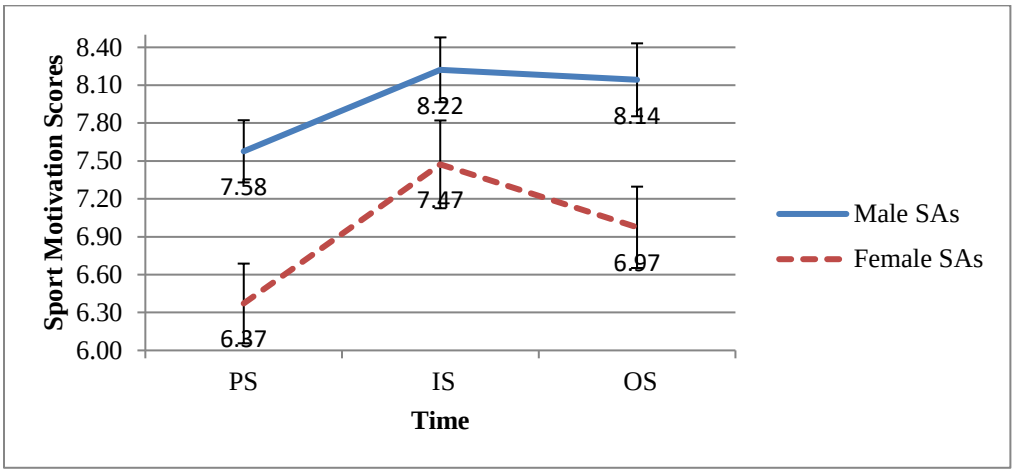


Figure 4.13. Means and standard errors of sport motivation scores for amotivated regulation (AMR) over the pre-season (PS), in-season (IS), and the off-season (OS) for male and female student-athletes (SAs).

4.1.4 Summary of Findings for Research Aims 1a, 1b and 1c

The findings for Research Aim 1a demonstrated that statistically significant differences were seen over time in sport motivation in the collective SA sample. For the more autonomously-based motivation types, IR was higher in the PS versus the IS, INTR was higher in the PS versus both the IS and OS, and IDR was higher in the PS versus the OS. AMR, a lack of motivation, resulted in higher scores in both the IS and OS when compared to the PS. No statistically significant differences were seen for the more controlling-based motivation types, ITR and EXTR, for the three time points.

Research Aim 1b and 1c's findings showed statistically significant interactions over the three time points among coactive and interactive SAs and male and female SAs. Statistically significant interactions for IR were seen between team type and time as well as between athletes' reported sex and time. Statistically significant differences via post hoc analyses showed higher IR scores in both the IS and the OS for coactive SAs versus interactive SAs, as well as higher IR scores in the OS for male SAs when compared to female SAs.

Next, statistically significant interactions for INTR were observed between team type and time as well as between athletes' reported sex and time. Statistically significant differences via post hoc analyses showed higher INTR scores in the OS for coactive SAs when compared to interactive SAs, as well as higher INTR scores in the OS for male SAs versus female SAs.

Moreover, a statistically significant interaction for IDR was seen in both the IS and in the OS with coactive SAs showing higher IDR scores than interactive SAs. Additionally, a statistically significant main effect was seen in athletes' reported sex with post hoc tests demonstrating higher IDR scores for male SAs versus female SAs in the OS.

Despite no interactions demonstrated for ITR between team type and time as well as between athletes' reported sex and time, a statistically significant main effect was found in the PS, IS and OS with coactive SAs showing higher ITR scores versus interactive SAs for all three

time points. No statistically significant differences were seen between male and female SAs for ITR.

Further, no statistically significant interactions or main effects were shown for EXTR between team type and time as well as between athletes' reported sex and time.

Lastly, findings for AMR resulted in one statistically significant interaction between team type and time where statistically significant differences via post hoc analyses showed higher AMR scores for interactive SAs when compared to coactive SAs in both the IS and the OS. No statistically significant interactions or main effects were seen between male and female SAs for AMR.

While 530 NCAA Division II SAs participated in the study, there were varied SA participation response rates demonstrated per each data collection time point. See Table 4.1 for descriptive statistics regarding sex and interactive/coactive sport type as it relates to SA participation rates.

Table 4.1

SA participation rate for research aims 1a-1c

Sex	Sport Type	*Pre-Season (PS)*	*In-Season (IS)*	*Off-Season (OS)*
Male *(n = 355)*	**Interactive** *(n = 207)*	83%; *n* = 173	81%; *n* = 168	88%; *n* = 183
	Coactive *(n = 148)*	78%; *n* = 115	68%; *n* = 100	59%; *n* = 87
Female *(n = 175)*	**Interactive** *(n = 76)*	92%; *n* = 70	91%; *n* = 69	88%; *n* = 67
	Coactive *(n = 99)*	95%; *n* = 94	91%; *n* = 90	94%; *n* = 93

Research Aim 2

4.2.1 Research Hypotheses 2a

Research Aim 2a stated that there was a statistically significant interaction between male and female SAs and SA wellness course history (completion of course, non-completion of course) in wellness dimensions. Results from the MANOVA suggested that a statistically significant interaction was seen between athletes' reported sex and SA wellness course history on the combined wellness dimensions, Wilk's $\Lambda = .96$, $F(9, 451) = 1.98$, $p = .040$, partial $\eta^2 = .04$. Box's test of equality of covariance, Box's $M = 171.10$, $F(135, 223604.15) = 1.22$, $p = .09$, indicated that the covariance matrices were, in fact, homogenous and not in violation ($p < .005$). Bartlett's test of sphericity (approximate $\chi 2 = 1231.29$, $df = 44$) was statistically significant, $p < .001$, implying that all of the variables tested were uncorrelated. See Tables H.6 – H.8 in the Appendix H for more detailed results from the 2x2 factorial MANOVA tests for Research Aim 2a.

Given that the overall F test for the interaction was statistically significant ($p < .05$) and without violation of test assumptions, univariate main effects were then examined for athletes' reported sex x SA wellness course history to determine which wellness dimensions were statistically significant. Based on the nine Levene's F tests, the homogeneity of variance assumptions were considered satisfied with all nine wellness dimensions being non-significant ($p > .05$). Only one statistically significant univariate effect was demonstrated in PWE, $F(1, 459) = 4.72$, $p = .011$. Female SAs and male SAs who completed the wellness course displayed higher PWE scores ($M = 16.26$, $SD = 1.96$; $M = 15.95$, $SD = 2.25$) than female SAs and male SAs who did not complete the wellness course ($M = 15.03$, $SD = 2.25$; $M = 15.87$, $SD = 2.32$).

No statistically significant univariate effects were seen for the remaining wellness dimensions (PWN, MW, SW, SPW, IW, EW, OW and FW) for athletes' reported sex x SA wellness course history ($p > .05$); therefore, these dimensions do not differ based upon being male or female and upon having completed or not completed the wellness course.

4.2.2 Research Hypotheses 2b and 2c

Research Aim 2b stated that there were no statistically significant differences in multi-dimensional wellness scores between male and female SAs. Research Aim 2c stated that there were statistically significant differences in multi-dimensional wellness scores between those who completed the wellness course and those that did not complete the wellness course.

Results from the MANOVA also demonstrated two statistically significant multivariate effects for athletes' reported sex, $F(9, 451) = 6.75$, $p < .001$, Wilk's $\Lambda = .88$, partial $\eta^2 = .12$, and for SA wellness course history, $F(9, 451) = 4.72$, $p < .001$, Wilk's $\Lambda = .91$, partial $\eta^2 = .09$. Given that these MANOVA test were overall statistically significant ($p < .05$) and without violation of test assumptions, univariate main effects were then examined separately for athletes' reported sex and SA wellness course history to determine which wellness dimensions were statistically significant. Based on nine Levene's *F* tests, the homogeneity of variance assumptions were considered satisfied with all nine wellness dimensions being non-significant ($p > .05$).

For Research Aim 2b, five statistically significant univariate main effects for athletes' reported sex were seen for PWN, $F(1, 459) = 9.92$, $p = .002$, partial $\eta^2 = .02$; SW, $F(1, 459) = 14.17$, $p < .001$, partial $\eta^2 = .03$; SPW, $F(1, 459) = 8.11$, $p = .005$, partial $\eta^2 = .02$; EW, $F(1, 459) = 8.43$, $p = .004$, partial $\eta^2 = .02$; and OW, $F(1, 459) = 5.24$, $p = .023$, partial $\eta^2 = .01$. No statistically significant univariate effects were seen for the remaining wellness dimensions (PWE, MW, IW, EW, and FW) for athletes' reported sex ($p > .05$).

Overall, female SAs showed higher means for PWN, SW, SPW, EW and OW than male SAs. For PWN, females scored higher in PWN ($M = 14.43$, $SD = 3.29$) than males ($M = 13.36$, $SD = 3.40$), and, for SW, females scored higher ($M = 17.08$, $SD = 2.14$) versus males ($M = 16.18$, $SD = 3.32$). In addition, females scored higher in SPW, EW and OW ($M = 15.44$, $SD = 1.83$; $M = 15.08$, $SD = 2.65$; $M = 16.34$, $SD = 2.30$) than males ($M = 14.87$, $SD = 2.03$; $M = 14.24$, $SD = 2.70$; $M = 15.81$, $SD = 2.36$).

See *Figure 4.14* below for differences in wellness scores for athletes' reported sex.

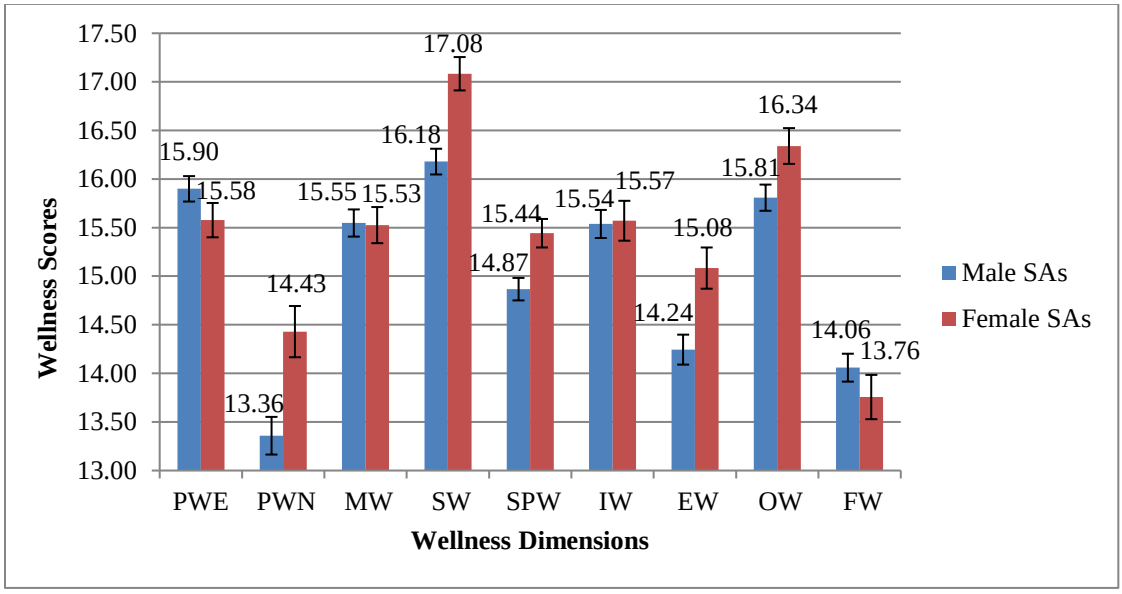


Figure 4.14. Means and standard errors of wellness dimensions scores for physical wellness-exercise (PWE), physical wellness-nutrition (PWN), mental wellness (MW), social wellness (SW), spiritual wellness (SPW), intellectual wellness (IW), environmental wellness (EW), occupational wellness (OW), and financial wellness (FW) for male and female student-athletes (SAs).

For Research Aim 2c, seven statistically significant univariate main effects for SA wellness course history were seen for PWE, $F(1, 459) = 8.60$, $p = .004$, partial $\eta^2 = .02$; PWN, $F(1, 459) = 21.35$, $p < .001$, partial $\eta^2 = .04$; MW, $F(1, 459) = 13.01$, $p < .001$, partial $\eta^2 = .03$; SW, $F(1, 459) = 12.32$, $p < .001$, partial $\eta^2 = .03$; IW, $F(1, 459) = 14.13$, $p < .001$, partial $\eta^2 = .03$; OW, $F(1, 459) = 14.66$, $p < .001$, partial $\eta^2 = .03$; and FW, $F(1, 459) = 10.58$, $p = .001$, partial $\eta^2 = .02$. No statistically significant univariate effects were seen for the remaining wellness dimensions (SPW and EW) for SA wellness course history ($p > .05$).

Overall, SAs who completed the wellness course showed higher means for PWE, PWN, MW, SW, IW, OW and FW than SAs who did not complete the wellness course. More specifically, SA completion of the wellness course demonstrated higher means in PWE and PWN

(*M* = 14.43, *SD* = 3.29; *M* = 13.36, *SD* = 3.40) than SA non-completion of course (*M* = 13.36, *SD* = 3.40; *M* = 13.36, *SD* = 3.40), and, for MW, SAs who completed the course scored higher (*M* = 17.08, *SD* = 2.14) versus SAs who did not complete the course (*M* = 16.18, *SD* = 3.32). In addition, SA completion of the wellness course showed higher scores in SPW, EW and OW (*M* = 15.44, *SD* = 1.83; *M* = 15.08, *SD* = 2.65; *M* = 16.34, *SD* = 2.30) than SA non-completion of course (*M* = 14.87, *SD* = 2.03; *M* = 14.24, *SD* = 2.70; *M* = 15.81, *SD* = 2.36).

See *Figure 4.15* below for differences in wellness scores for SAs who completed/not completed the wellness course.

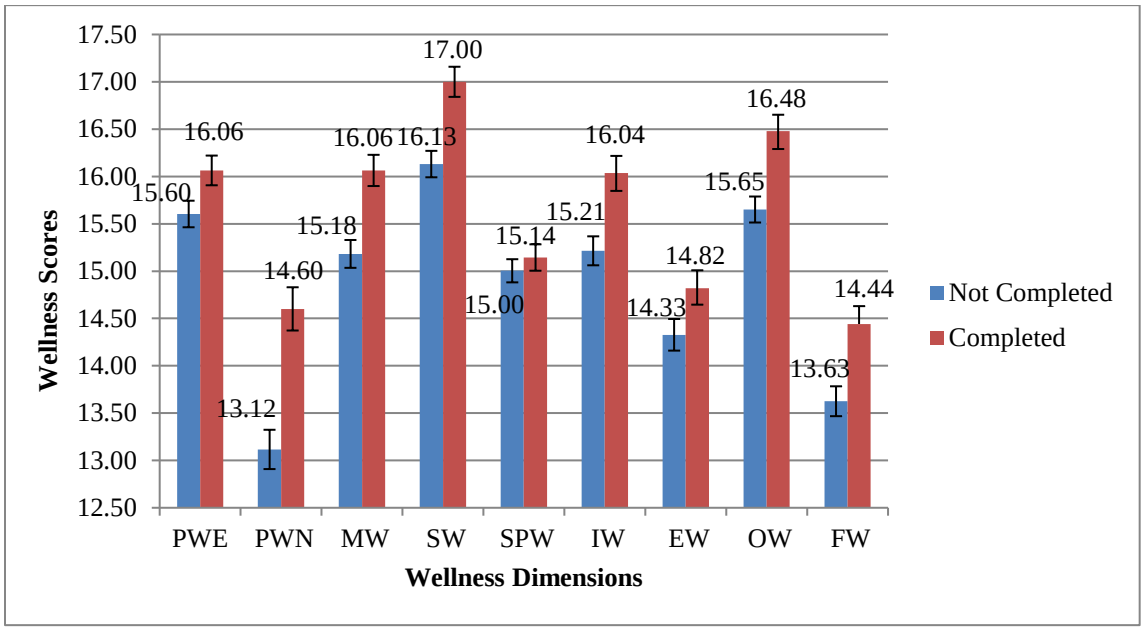


Figure 4.15. Means and standard errors of wellness dimensions scores for physical wellness-exercise (PWE), physical wellness-nutrition (PWN), mental wellness (MW), social wellness (SW), spiritual wellness (SPW), intellectual wellness (IW), environmental wellness (EW), occupational wellness (OW), and financial wellness (FW) in student-athletes (SAs) who completed/not completed the wellness course.

4.2.3 Summary of Findings for Research Aims 2a, 2b and 2c

In summary for Research Aim 2, Research Aim 2a's findings revealed one statistically significant interaction between male and female SAs and those who completed a college wellness course and those who have not on the combined wellness dimensions. One statistically significant univariate effect was demonstrated in PWE with female SAs and male SAs who completed the wellness course displaying higher PWE scores versus female SAs and male SAs who did not complete the wellness course. Therefore, those SAs who completed the wellness course, regardless of sex, showed higher scores and engagement in PWE than those SAs who did complete the wellness course.

Due to two statistically significant multivariate effects in athletes' reported sex and wellness course completion/non-completion, univariate main effects for Research Aim 2b and 2c were examined. Findings for Research Aim 2b demonstrated no statistically significant univariate effects between male and females SAs in four of the nine wellness dimensions (PWE, MW, IW, and FW); therefore, these dimensions do not differ based upon being male or female. However, five of the nine wellness dimensions (PWN, SW, SPW, EW, and OW) statistically significant univariate effects with female SAs possessing higher scores than male SAs.

For Research Aim 2c, findings showed statistically significant univariate effects between those SAs who completed the wellness course when compared to those SAs who did not complete the course in seven of the nine wellness dimensions (PWE, PWN, MW, SW, IW, OW and FW). No statistically significant univariate effects in the remaining wellness dimensions (SPW and EW) were found; therefore, these dimensions do not differ based upon having completed or not completed the wellness course.

While 355 male NCAA Division II SAs and 175 female SAs participated in the study, SA participation response rates or males was 81% (n =288) and for females was 94% (n = 175).

CHAPTER FIVE: DISCUSSION

The central aims of this present study were to 1) examine differences in NCAA Division II student-athletes' (SAs) six sport motivation types longitudinally, and 2) to understand differences between SAs' demographic characteristics as it relates to nine dimensions of wellness over the course of one academic year.

5.1 Research Aim 1

Research Aim 1 examined six sport motivation types [intrinsic motivation (IR), integrated regulation (INTR), identified regulation (IDR), introjected regulation (INT), external regulation (EXTR), and amotivation (AMR)] over three time points [pre-season (PS), in-season (IS), off-season (OS)] in student-athletes (SAs) and investigated for statistical interactions between team type (coactive, interactive) and for athletes' reported sex (male, female).

5.1.1 Research Aim 1a

For Research Aim 1a, it was hypothesized that statistically significant differences would be demonstrated in sport motivation over time in the collective SA sample. Findings from the present study did, in fact, show statistically significant differences in four of the six sport motivation types (IR, INTR, IDR and AMR) over time supporting the hypothesis.

More specifically, higher IR, INTR, and IDR scores were found in the PS than during the IS and the OS as well as higher AMR scores in both the IS and OS when compared to the PS. IR, the most self-determined type of regulation, and INTR and IDR, also autonomous-based motivation types, were shown to have peak scores during the PS with decreasing values seen in the IS or competitive season and continuing into the OS.

Conversely, AMR, a complete lack of motivation and on the opposite end of the self-determination theory continuum than IR, showed an increase in scores from the PS to the IS and scores remained relatively the same from the IS to the OS. In essence, more self-determined motivation was at its highest in the PS while increasing AMR scores predominated over time extending into the IS and OS.

These findings are consistent with the athlete burnout and motivation literature using the Self-Determination Theory (SDT) to assist in explaining that motivation extremely low in internalization (i.e., AMR) is positively associated with burnout and motivation extremely high in internalization (i.e., IR) is negatively associated with burnout (Cresswell, 2009; Cresswell & Eklund, 2005a, 2005b; Raedeke & Smith, 2004; Gould, Udry, Tuffey & Loehr, 1996).

Yet, the extrinsic forms of motivation (i.e., INTR, IDR, ITR, EXTR) have been notably less significant and more ambiguous in nature in their associations with burnout (Cresswell & Eklund, 2005a, 2005b; Raedeke & Smith, 2001). This is partially consistent with the study's findings due to EXTR and ITR, both forms of extrinsic and less autonomously-based motivation, showing little to no statistically significant results between the three time points. Interestingly, both INTR and IDR, which are forms of extrinsic, yet autonomously-based motivation, demonstrated significant differences between the three time points with higher scores in the PS when compared to the IS and the OS. While INTR and IDR are considered extrinsic motivations sources, these have been highly associated with more self-determined behaviors as discussed in Chapter 2.

The concept of athlete burnout has been described as a non-static, "experiential syndrome" that is comprised of emotional overextension and physical exhaustion due to sport participation, feelings of reduced accomplishment and a devaluation of one's sport (Cresswell & Eklund, 2005a, 2005b; Raedeke & Smith, 1997, 2004; Schutte, Toppinen, Kalimo, & Schaufeli, 2000). Kenttä, Hassmén, and Raglin (2001) indicated that both physiological and psychological factors are agents of athlete burnout. However, a link between the most cognitive of the burnout dimensions, sport devaluation, and motivation exists demonstrating a strong, positive relationship between these factors (Lemyre, Roberts, & Stray-Gundersen, 2006) whereas the physiological burnout component is symptomatic of athlete overtraining (Cresswell & Eklund, 2005a; Cresswell & Eklund, 2005b; Lemyre, Roberts, & Stray-Gundersen, 2006). Cresswell and Eklund (2005b) also found that feelings of reduced accomplishment and sport devaluation were

negatively related to extrinsic motivation and emotional and physical exhaustion were positively related to extrinsic motivation.

However, there has been little research conducted on athlete burnout and evaluation of burnout over time (Cresswell & Eklund, 2005b) even though the literature has characterized burnout as a non-static experience which increases the likelihood of producing fluctuations over time. Gould, Tuffey, Udry, and Loehr (1996) as well as Cresswell and Eklund (2005b) noted that these fluctuations over time regarding feelings of reduced accomplishment and athlete burnout has been linked to win/loss ratios, less than desirable performances, consistently not meeting expectations of one's self or others, and negative pressures from significant others. It is possible that this sample of SAs for the current study presents forms of athlete burnout over the course of time due to these aforementioned circumstances. For future reference, it would be important to incorporate questions and prompts in a mixed methods study design to best account for reasons for these fluctuations over time relating to burnout.

5.1.2 Research Aim 1b and 1c

For Research Aim 1b and 1c, it was hypothesized that there would be statistically significant interactions in sport motivation types between coactive and interactive sport-based SAs (sport type) and between male and female SAs (athletes' reported sex) over three time points. Findings from the current study did present statistically significant interactions for sport type in IR, INTR, IDR and AMR and for athlete's reported sex in IR and INTR which supported the hypotheses.

Sport Type. More specifically, the current study's results demonstrated interactions between interactive and coactive SAs in IR, INTR, and IDR with higher scores for interactive SAs seen in the PS for these four sport motivation types but lower scores seen in the IS and OS when compared to coactive SAs. On the contrary, the opposite result was demonstrated with AMR where lower scores were seen in the interactive SAs in the PS but higher scores developed over time in the IS and OS when compared to coactive SAs. Thus, these interactions between SA

sport types over time occurred between the PS and IS time points with more autonomous-based motivations types (i.e., IR, INTR, IDR) decreasing over time and increasing values for AMR rose over time for interactive SAs. The simple main effects found for IR, INTR, IDR and AMR that resulted in statistically significant differences between SA sport types support the aforementioned trend over time with coactive versus interactive SAs having higher IR, INTR and IDR scores and lower AMR scores in the IS and OS. Additionally, a main effect was seen for sport type in ITR, a more controlled versus autonomous-based motivation type, where coactive SAs possessed high scores than interactive SAs in the PS, IS and OS.

These findings are consistent with the motivation and sport type literature using the SDT to further explain differences seen between interactive and coactive SAs as well as how training and competition contexts may influence the motivational environment. Based off of the literature for SDT as presented in Chapter 2, autonomy is a basic psychological need that can enhance feelings of well-being and aid in performance of a task (Deci & Ryan, 1985, 1991) and that coaches can provide an autonomy-supported climate to SAs through showing interest in SA input at times of decision-making and praise for autonomous behavior (Conroy & Coatsworth, 2007). Moreover, previous studies have showed that coactive versus interactive SAs perceive that they receive more autonomy support and individualized feedback from their coaches (Hollembeak & Amorose, 2005).

These differences between the coactive and interactive SA from past research may be due, in part, to coactive SAs presenting a greater need for coach instructions for direction versus interactive SAs who may rely less on their coach for instructions but, instead, may rely on teammates to make decisions (Terry, 1984). In turn, this creates more individualization of instructions and more frequent feedback for the coactive SA (Alfermann, Lee & Wirth, 2005; Mageau & Vallerand, 2003) as well as the opportunity to develop a closer athlete-coach bond (Salminen & Liukkonen, 1996; Terry, 1984), thus, increasing the perceived feelings of autonomy for the coactive SA that is highly linked with more autonomous-based motivation types like IR,

INTR and IDR (Ryan, 1995; Ryan & Connell, 1989; Ryan & Deci, 2007; Vallerand, 1997). It is also important to note that coactive SAs may perceive higher levels of autonomy over their athletic activities because of the individual or small group atmosphere of training and competition promoting more of a sense of perceived control, accomplishment and enjoyment lending itself to more intrinsic motivation over time (Ames, 1992; Hanrahan & Cerin, 2009).

In addition, rewards based upon contingencies attached to performances (e.g., games or competitions) are more predominant during the IS or competitive season versus during the PS or training season due to the nature of the competition itself as well as the stakes for winning versus losing (Deci & Ryan, 1987). These types of extrinsic rewards have been known to elicit less autonomous-based motivation and more controlled-based motivation (Deci & Ryan, 1987).

However, ITR, a less autonomous-based motivation type which is based on feelings of shame, guilt, ego and pride as motivators, was a factor in this current study where coactive SAs showed higher levels than interactive SAs in the PS, IS and OS. Yet, coactive SAs maintained high levels of IR, INTR and IDR in the IS and OS which are self-determined in nature. Deci and Ryan (2000) suggested that ITR behavior is embedded within self-esteem contingencies where individuals feel like they should carry out a behavior or task and do so in response to that feeling. Moreover, ITR has been found to be a relatively non-stable form of regulation, yet, research has shown ITR to be partially internalized and is more likely to be maintained over time versus EXTR (Deci and Ryan, 2000).

More often than not, coaches may shift their coaching style to be more controlling versus autonomy-supportive during the IS or during the competitive season so as to control for the outcome of a performance which may diminish autonomous-based motivation in SAs over time (Vallerand & Losier, 1999). Furthermore, during the training season, coaches may employ more autonomy support because they possess more interest in SA's input when making decisions than when compared with utilizing more controlling coaching styles during the competitive season due less overall win-loss accountability in the PS or training season (Conroy & Coatsworth, 2007).

The current study's findings align with the shift paradigm in coaching styles as well as SA perception of autonomy support from their coaches from the PS to the IS relating to the differences past research has shown between interactive and coactive SAs.

Athletes' Reported Sex. The present study also demonstrated interactions between male and female SAs in IR and INTR with higher scores seen for female SAs seen in the PS for these two sport motivation types but lower scores seen in the IS and OS when compared to male SAs. Therefore, these interactions between SA reported sex over time occurred between the PS and IS time points with higher levels of autonomous-based motivations types (i.e., IR, INTR) seen for female SAs earlier in the athletic season, yet, showing a decrease over time for female SAs in the IS and the OS.

The simple main effects found for IR and INTR that resulted in statistically significant differences between male and female SAs support the aforementioned trend over time with male versus female SAs having higher IR and INTR scores in the OS. Additionally, there was one main effect seen in IDR resulting in a statistically significant difference between male and female SAs with males possessing higher scores in the OS when compared with female SAs. Overall, male SAs indicated higher self-determination motivation types when compared to female SAs during and after their respective competitive season.

These findings are mixed as it relates with the sport motivation and sex/gender literature. Previous research that supports the current study's results suggests that male SAs have shown higher levels of self-determination than female SAs (Amorose & Horn, 2000). Also, female SAs showed higher levels of tension and pressure when competing in their sport which was associated with competitive trait anxiety and, thus, suggesting a lower level of perceived self-determination (Gill, 1988; Segal & Weinberg, 1984).

In opposition to the current study's findings, studies have demonstrated male SAs exhibiting lower levels of self-determination when compared to female SAs (Petherick & Weigand, 2002; Pelletier et. al, 1995). Additionally, male SAs have been shown to be more likely

to be motivated in their sport due to competition, winning and risk-taking which has been known as a correlate to competitiveness (Deaner, Balish, & Lomardo, 2016; Croson & Gneezy, 2009) which may be related to more extrinsic forms of motivation.

Given that motivational differences have been seen in the literature between male and female SAs, factors that may have influenced the current study's findings of males exhibiting higher autonomous-based motivation types when compared to females could be related to coaching styles, behaviors and types of feedback used. Research has suggested that females typically prefer more democratic coaching styles than do their male counterparts (Chellandurai & Arnott, 1985). Moreover, female SAs have reported having a higher dislike for coaching styles high in punishment or feedback containing negative consequences (Horn & Glenn, 1988). It is possible that what has been seen with the differences between male and female SAs is a less than favorable and democratic coaching style and a more punitive feedback type experienced by the female SAs in this participant sample than when compared to their male SA peers.

Scholarship status and sport motivation have also provided mixed results in the literature for male and female SAs. Ryan (1980) supported the notion that male scholarship SAs may perceive the scholarship as controlling, thus, diminishing intrinsic motivation while female scholarship SAs may perceive the scholarship as rewarding and less controlling and, therefore, not reducing intrinsic motivation levels. However, Ryan (1980)'s findings were mixed. In contrast, Amorose and Horn (2000, 2001) found that both male and female scholarship SAs demonstrated higher intrinsic motivation levels than those who were non-scholarship athletes. For future reference, it would be important to incorporate questions based on scholarship status, coaching style preferences and even class standing to best further investigate into these sex-based differences in sport motivation and across time.

5.2 Research Aim 2

Research Aim 2 assessed for differences in nine multi-dimensional wellness dimensions [physical wellness exercise (PWE), physical wellness nutrition (PWN), mental (MW), social

(SW), spiritual (SPW), intellectual (IW), environmental (EW), occupational (OW) and financial (FW)] and also investigated for statistical interactions between athletes' reported sex (male, female) and between SAs who have completed a multi-dimensional wellness course versus those SAs who have not (completion of course, non-completion of course).

5.2.1 Research Aim 2a

For Research Aim 2a, it was hypothesized that there would be statistically significant interactions in the wellness dimensions between male and female SAs and those SAs who completed a college multi-dimensional wellness course versus SAs who have not. Findings from the current study did present one statistically significant interaction between athletes' reported sex and completion/non-completion of the wellness course in one wellness dimension, PWE, which supported this hypothesis.

More specifically, female SAs and male SAs who completed the wellness course demonstrated higher PWE scores than female SAs and male SAs who did not complete the wellness course. In addition, for those SAs who completed the course, female SAs showed higher means when compared to male SAs. No other interactions were seen for the remaining wellness dimensions. This finding presented an interesting outcome where both male and female SAs who have taken the multi-dimensional wellness course scored higher in PWE than those male and female SAs who had not yet taken the course.

Collegiate SAs are known to train most days of the week for their respective sport in addition to the required, sport-specific strength and conditioning training. In other words, SAs are already physically active and training at high volumes depending on the time of the season and periodization schedule. The MDWI, the 45-item designed to measure perceived behaviors for nine wellness dimensions, was distributed to the SAs for completion during the first data collection time point in August where most SAs were already training for their sport. Therefore, all SAs were comparatively physically active at this point which was indicated by the questions

asked and data collected for the number of hours per week of practice on the demographics/historical questionnaire, thus, was not controlled for in the analysis of the data.

While relatively little research has been conducted among collegiate SAs and multi-dimensional or holistic wellness education, the multi-dimensional wellness course may have provided a platform for educating the SAs about the biopsychosocial benefits of regular exercise, thus, positively influencing their perceived behaviors leading to higher scores in PWE. However, the use of routines that are a part of the Five Cardinal Mental Skills model (Henschen, 2005; Mesagno & Mullane-Grant, 2010) and that SAs often use as a part of their physical practices and performance could also explain a more generalized effect in the SAs' personal well-being which includes the exercise component creating a basic structure and calming effect (DuPont, DuPont-Spencer, & DuPont, 2003).

Additionally, Beauchemin (2014) found that the Five Cardinal Mental Skills model (relaxation, imagery, routines, self-talk and concentration) demonstrated a means of engagement for SAs as well as resources and skills that bolstered SAs' overall well-being. Future research with multi-dimensional wellness and the SA population would be best completed if the researcher could better understand more generalizable influences via qualitative-based question-asking and data collection as it relates to possible motivation and psychological factors. It would also be prudent to examine program efficacy of the holistic wellness course as an intervention pre- and post-course for both SAs and non-SAs to determine if differences and similarities exist between the two groups.

5.2.2 Research Aim 2b and 2c

For Research Aim 2b, it was hypothesized that there would be no statistically significant differences in multi-dimensional wellness levels between male and female SAs. For Research Aim 2c, it was hypothesized that there would be statistically significant differences between SAs who completed a college multi-dimensional wellness course versus SAs who have not. Findings

from the current study did present two statistically significant multivariate effects for athletes' reported sex and for SA course history.

Athletes' Reported Sex. The present study did, in fact, demonstrate statistically significant differences in wellness levels between male and female SAs where five univariate main effects for PWN, SW, SPW, EW and OW were seen. More specifically, female SAs had higher means in PWN, SW, SPW, EW and OW when compared to male SAs. No other statistically significant differences were seen between male and female SAs. Therefore, these results have not supported the hypothesis that postulated that there would be no differences in wellness levels between male and female SAs and, thus, this hypothesis has been rejected.

This finding is mixed as it relates with the college SAs, wellness and sex/gender literature. The wellness-athlete literature available is also few in numbers and is often limited to athlete services for psychological counseling, eating disorders/disordered eating, risky behaviors and stress and coping (Nattiv, Puffer & Green, 1997; Waldron & Krane, 2005). It is important to note that there is little to no literature available to compare this current study's findings to that discussed collegiate SAs and multi-dimensional wellness as the researcher has defined with the nine wellness dimensions.

However, in one study, LaFountaine (2009) showed that female SAs scored highest in exercise, friendship, and love and male SAs scored highest in exercise, sense of worth and friendship. These results align with the Research Aim 2a where both females and males scored higher in PWE than those SAs who did not take the wellness course. The finding where both males and females scored high in friendship connects to the SW dimension finding in this study's Research Aim 2b for female SAs but not for male SAs. Furthermore, female SAs scored the lowest in spirituality, stress management, nutrition and overall wellness and male SAs scored the lowest scores in spirituality, nutrition, work and overall wellness (LaFountaine, 2009). This finding conflicts with this present study's finding where female SAs scored high on the PWN and SPW dimensions, yet, is consistent with the males having lower SPW, PWN and OW than the

female SAs. In addition, previous research with non-athletes has shown that college females reported having higher spiritual wellness scores than their male counterparts (Hammermeister, Flint, El-Alayli, Ridnour, & Peterson, 2005) which is consistent with the findings in this research aim.

SA Wellness Course History. The present study demonstrated seven statistically significant univariate main effects for PWE, PWN, MW, SW, IW OW and FW. SAs that completed the multi-dimensional wellness course showed higher means for all seven of the aforementioned dimensions when compared to those SAs who did not complete the course. Thus, these findings support the hypothesis of differences existing between these two groupings of SAs and their course history.

In a previous study, Von Guenthner and Hammermeister (2007) found that male SAs who scored high in wellness (i.e., emotional, social, spiritual, intellectual, and physical) scored higher on coping skills associated with athletics that included coachability, concentration, goal setting/mental preparation, and peaking under pressure. Moreover, female SAs who scored high in the same wellness dimensions scored higher in coping with adversity, coachability, concentration, goal setting/mental preparation, and freedom from worry (Von Guenthner & Hammermeister, 2007). This finding relates to the PWE, PWN, MW SW, and IW dimensions of the current study that those SAs may learn to cope more with stress and pressures if they have the education and resources available to them through programmatic or service-based options.

In a general college health and wellness course, it was found that emotional well-being, comprised of global self-worth, appearance, romantic relationships, social acceptance, and athletic competence, had increased over time (pre- and posttest) for college students enrolled the course (Muller, Dennis, & Gorrow, 2006). This finding is also consistent with higher MW and SW scores for those SAs taking the wellness course versus those that did not complete the course.

Along the same vein, some research has suggested that health and wellness interventions designed to teach SAs to have a self-compassionate frame of mind to cope with difficult events

have contributed positively to athletes' performance (Mosewich, Crocker, Kowalski, & Delongis, 2013). Further research is needed to develop a broader understanding of the unique role self-compassion in a wellness course or intervention setting may play in athletic performance as well as what positive impacts can be made in an SAs' overall well-being.

In addition, future research with multi-dimensional wellness and SA sex/gender is important for understanding overall well-being in college SAs as it relates to sex differences and possible impacts on one's athletic performance and personal development through the emerging adulthood phase. Findings from the current study indicate a need for future research pertaining to holistic wellness programming for college SAs as well as targeted programming and support for specific populations (i.e., males and females, first generation and non-first generation) within the student-athlete population. This type of intervention may assist in identifying and improving wellness deficits to further facilitate healthier overall well-being in SAs. Having the ability to understand the variety of barriers SAs face will help those in administrative roles promote wellness within this population.

5.3 Study Limitations

While several strengths existed within the present study, it is not without limitations. The present study was exploratory in nature examining differences in sport motivation and multi-dimensional wellness among Division II SAs from one private, Midwestern university. In other words, study participants or SAs recruited from this one NCAA Division II institution were taken from a convenience sample and the study's findings may limit the generalizability beyond this sample. Thus, these findings must be interpreted within the context of the study's limitations.

Furthermore, the paper-based SMS II, the MDWI and the demographics/historical questionnaires were self-report in nature which assumptions were made that the SAs were answering the items truthfully in the time frame given to them to complete the surveys. Thus, SA participants may have run the risk of answering survey items dishonestly due to a social

desirability bias, to avoid embarrassment or to please the researcher who they understand will see their answers which can undermine the integrity of the survey data.

5.4 Conclusion

In conclusion, further research should ensue to better understand sport motivation and multi-dimensional wellness on a national scale examining Division I, II and III and NAIA athletes in order to provide more generalizable results. With that said, higher levels of intrinsic motivation may often be assumed in collegiate SAs with lesser emphasis needing to be placed on the understanding, measuring, and countering levels of amotivation and lesser self-determined sources of extrinsic motivation as it relates to their performance in sport. Beginning to examine motivational types for collegiate SAs and its relationships with self-objectification, multi-dimensional wellness, grit, and self-compassion are among many other demographic influences that would work to fill in remaining gaps and empirical questions regarding the interrelationships among different psychological and environmental factors within sport psychology as it relates to athletes, athletic teams, and athletic performance. Investigating collegiate athletic team's sources of motivation alongside possible interactions due to team dynamics and cohesion within the context of their respective sport could provide additional insight into the results of the current study.

In addition, further comparative analysis is needed to better understand both coach as well as student-athlete perceptions and stereotypes of motivation and participation in their respective sports along with any potential interactions. Coaches and coaching methods have played a large role in the development of athletes' psychological function, confidence, motivation, and skill level in sport to enhance the effectiveness of performance (Shen, Garn, McCaughtry, Martin, & Fahlman, 2013). Moreover, coaching methods and parental influence are suggested as future studies due to direct influences on athletic performance, satisfaction, and motivation through either the promotion or hindrance of self-esteem, self-efficacy, and sources of intrinsic motivation (Martens & Webber, 2002).

APPENDIX A: SPORT MOTIVATION SCALE II

Survey #1

Instructions

Using the scale below, please indicate to what extent each of the following items corresponds to one of the reasons for which you are presently practicing your sport.

Does not Correspond at all		Corresponds a little		Corresponds moderately		Corresponds a lot		Corresponds exactly
1		2	3	4	5	6		7

I practice my sport…

Because it gives me pleasure to learn more about my sport.	1	2	3	4	5	6	7
Because I find it enjoyable to discover new performance strategies.	1	2	3	4	5	6	7
Because it is very interesting to learn how I can improve.	1	2	3	4	5	6	7
Because practicing sports reflects the essence of who I am.	1	2	3	4	5	6	7
Because participating in sport is an integral part of my life.	1	2	3	4	5	6	7
Because through sport, I am living in line with my deepest principles.	1	2	3	4	5	6	7
Because I have chosen this sport as a way to develop myself.	1	2	3	4	5	6	7
Because I found it is a good way to develop aspects of myself that I value.	1	2	3	4	5	6	7
Because it is one of the best ways I have chosen to develop other aspects of myself.	1	2	3	4	5	6	7
Because I would feel bad about myself if I did not take the time to do it.	1	2	3	4	5	6	7
Because I feel better about myself when I do.	1	2	3	4	5	6	7
Because I would not feel worthwhile if I did not.	1	2	3	4	5	6	7
Because people I care about would be upset with me if I didn't.	1	2	3	4	5	6	7
Because people around me reward me when I do.	1	2	3	4	5	6	7
I used to have good reasons for doing sports, but now I am asking myself if I should continue.	1	2	3	4	5	6	7
So that others will praise me for what I do.	1	2	3	4	5	6	7
It is not clear to me anymore; I don't really think my place is in sport.	1	2	3	4	5	6	7
Because I think others would disapprove of me if I did not.	1	2	3	4	5	6	7

APPENDIX B: MULTI-DIMENSIONAL WELLNESS INVENTORY

Survey #2

Instructions: Please answer the following questions using the scale below by circling the appropriate number.

Does not describe me at all	Describes me a little	Describes me most of the time	Absolutely describes me
1	2	3	4

I am accepting of the diversity in myself as well as in others' cultures, backgrounds and beliefs.	1	2	3	4
I am told that I am a good listener and have effective communication skills.	1	2	3	4
I ask for and accept feedback in a positive manner from others.	1	2	3	4
I do not cope well with situations and changes that affect my life.	1	2	3	4
I am uncertain of the qualities I am looking for in a meaningful friendship or relationship.	1	2	3	4
I choose to safeguard my financial information and Social Security number.	1	2	3	4
I often read articles about personal finance so I am up to date with the latest information.	1	2	3	4
I choose to pursue mentally stimulating activities and interests.	1	2	3	4
I choose to make my living space "green friendly" by conserving energy and/or using energy efficient equipment and appliances.	1	2	3	4
I frequently put time and energy into personal and professional development.	1	2	3	4
I access credible and reliable resources and think critically about issues.	1	2	3	4
I choose to freely give of myself and my time to others.	1	2	3	4
I have a negative body image of myself.	1	2	3	4
I do not practice teamwork (e.g., I don't pull my own weight on team	1	2	3	4

assignments or projects).				
.I allow others the freedom to believe what they want without pressuring them to accept my beliefs.	1	2	3	4
I know how many calories I should consume (daily) without going over my limit.	1	2	3	4
My feelings provide me with information about myself.	1	2	3	4
I rarely read food labels when making choices about the foods I buy.	1	2	3	4
I rarely participate in reducing, reusing, and recycling used materials.	1	2	3	4
I know which fats are bad and which fats are better for me to consume.	1	2	3	4
I can identify healthy serving sizes for the foods that I eat.	1	2	3	4
I seek help and support when I need it and have close relationships with my family and/or friends.	1	2	3	4
I work to continually explore and expand my personal beliefs, values and priorities.	1	2	3	4
I choose to eat fruits, vegetables and whole grains every day.	1	2	3	4
I choose to feel confident and optimistic about where I am at in life.	1	2	3	4
I am aware of how my attitude and personality affects my reactions and responses to others.	1	2	3	4
I am dissatisfied with my educational path (e.g., major, time to graduation, quality).	1	2	3	4
I find satisfaction with my studies/career choices.	1	2	3	4
I have a planned budget and choose to stay within it consistently.	1	2	3	4
I do not understand how my actions can affect my credit score.	1	2	3	4
I practice regular cardiovascular exercise on most days of the week for at least 30 minutes each time.	1	2	3	4
I do not have a sense of meaning or purpose in life.	1	2	3	4

I am happy with the balance I achieve between my studies/work time and my leisure time.	1	2	3	4
I choose to communicate assertively with others with a direct, honest and respectful intent.	1	2	3	4
I could be at risk for disease and illness if I become sedentary.	1	2	3	4
I practice upper and lower body flexibility exercises at least twice a week.	1	2	3	4
I am open-minded and find purpose in my academic/professional pursuits.	1	2	3	4
I respect my local environmental areas including waterways, green spaces and animal habitats.	1	2	3	4
I find the act of forgiving other people difficult.	1	2	3	4
I have access to clean air, nutritious food, sanitary water and adequate clothing in my surroundings.	1	2	3	4
It is important to choose appropriate learning strategies, techniques and preferences for successful learning outcomes.	1	2	3	4
I save money for emergencies and future needs (e.g., paying my student loans, credit card debt, etc.)	1	2	3	4
I am respected and viewed as a leader among my peers at school/work.	1	2	3	4
I practice upper and lower body muscular strengthening exercises at least twice a week.	1	2	3	4
It is important that I understand what greenhouse gas emissions are and what effects they have on the environment.	1	2	3	4

APPENDIX C: DEMOGRAPHICS/HISTORICAL QUESTIONNAIRE

Survey #3

Instructions: Please write or circle only one answer for each question.

Age: _____ (as of today) Prefer not to answer

Sex: Male Female Prefer not to answer

Nationality: United States International Prefer not to answer

Major: _____ Prefer not to answer

Class Standing: FR SO JR SR Prefer not to answer

Are you an athlete with an athletic scholarship?

a. Yes
    a. Full
    b. Partial
b. No
c. Prefer not to answer

Are you the first person in your family to attend college?

a. Yes
b. No
c. Prefer not to answer

Circle the GPA range below that best represents your cumulative GPA.

Note: If you are a freshman, what was your cumulative HSGPA?

If you have been in college 2+ years what is your cumulative college GPA?

≤ 0.50	0.51-1.00	1.01-1.50	1.51-2.00	2.01-2.50
2.51-3.00	3.01-3.50	≥ 3.50	Prefer to not answer	

What sport do you play at UIndy? _____

Which of the following statements describes you?

a. I compete in an individual sport or event.
b. I compete in a team sport or event.
c. I compete in both an individual and team sport or event.

My head coach is: Male Female

How many hours per week do you practice?

a. 2-4
b. 5-7
c. 8-10
d. 11-13
e. 14-16
f. 17-20
g. more than 20

Which of the following statements describes you?

a. I am a typically a starter in games or competitions.
b. I am a typically a non-starter in games or competitions.
c. I am not sure if I will be a starter or non-starter (for first year athletes only).

Which of the following statements describes you?

a. This is my first year on a team.
b. I have been on a team for at least one year.

How many hours per week do you study? (Study time includes doing homework, study halls, studying for exams, etc.)

a. 1-2
b. 3-4
c. 5-6
d. 7-8
e. 9-10
f. 11-13
g. 14-16
h. more than 17

On a scale from 1 (not at all) to 4 (very much), rate the extent to which your coach(es) care about your… (Circle the appropriate number)

a. academic performance

1	2	3	4
Not at all	Very little	Somewhat	Very much

b. athletic performance

1	2	3	4
Not at all	Very little	Somewhat	Very much

c. personal well-being

1	2	3	4
Not at all	Very little	Somewhat	Very much

On a scale from 1 (not at all) to 4 (very much), rate the extent to which your parent(s) care about your _____: (Circle the appropriate number)

a. academic performance

1	2	3	4
Not at all	Very little	Somewhat	Very much

b. athletic performance

1	2	3	4
Not at all	Very little	Somewhat	Very much

c. personal well-being

1	2	3	4
Not at all	Very little	Somewhat	Very much

On a scale from 1 (strongly disagree) to 4 (Strongly agree), to what extent do you agree with the following statements?

a. Coaches provide me with adequate equipment to be able to practice my sport.

1	2	3	4
Strongly disagree	Disagree	Agree	Strongly agree

b. I have adequate facilities for my sport at UIndy.

1	2	3	4
Strongly disagree	Disagree	Agree	Strongly agree

c. I am receiving adequate academic support and resources.

1	2	3	4
Strongly disagree	Disagree	Agree	Strongly agree

d. I am receiving adequate support and resources from the University for my future career goals.

1	2	3	4	5
Strongly disagree	Disagree	Agree	Strongly agree	Not applicable

e. I am receiving an adequate time with athletic trainers and sports medicine personnel.

1	2	3	4
Strongly disagree	Disagree	Agree	Strongly agree

After graduating, do you plan to play your sport competitively? Yes No

After graduating, do you plan to play your sport recreationally? Yes No

APPENDIX D: RECRUITMENT EMAIL

Dear Coach _____:

I am pursuing a research project titled "Exploring Sport Motivation and Multi-Dimensional Wellness in NCAA Division II Student-Athletes." The purpose of this exploratory study is to further understand the effects and relationships between perceptions relating to holistic wellness and sport motivation over time of NCAA Division II student-athletes. Thus, this study would include student-athletes currently competing on each of the University of Indianapolis' Athletic Teams who are at least 18 years of age. Those UIndy students who are not current members of UIndy NCAA Division II teams as well as individuals who are former UIndy student-athletes are not eligible to participate in this study.

I am asking for you to consider providing me with time to meet with your student-athletes during your practice or team meeting. I am collecting survey-based data at three time points (pre-season, in-season and off-season) which will be approximately 20-30 minutes of your practice or team meeting time during the first time point and approximately 5 minutes for the second and third time points. By granting me access to your student-athletes, I will have the chance to better understand information—for researchers and collegiate coaches —about various aspects of sports behavior relating to sport motivation types and multi-dimensional wellness in Division II student-athletes.

Please let me know if you will allow me to meet with your student-athletes at three separate time points this academic year.

Most sincerely,

Mindy Mayol

APPENDIX E: SCRIPT- FIRST DATA COLLECTION

My name is _____. I would like to invite you to participate in my research study that I am conducting for my dissertation. I am seeking to further understand the relationships as it relates to perceptions and behaviors in sport motivation and multi-dimensional wellness of NCAA Division II athletes.

This study includes student-athletes currently competing on any of the University of Indianapolis' athletic teams who are at least 18 years of age. Those UIndy students who are not current members of UIndy NCAA Division II teams as well as individuals who are former UIndy student-athletes are not eligible to participate in this study.

As part of this study, you will be asked to complete a sport motivation survey over three time points that include the pre-season, in-season and off-season, and a multi-dimensional wellness survey and demographic/historical questionnaire at only one time point. In total, the surveys will take approximately 20-30 minutes to complete during the first visit and approximately 3 minutes during the second and third visits.

Participation will in no way affect your grades in courses for which you are registered. We have asked your coach to leave the room before discussing the study and until the last participant finishes the surveys. Your coach will have no knowledge of who does or does not participate in the study.

I will now hand out the informed consent forms – this form tells you all the details about the study. Keep in mind that all information that you provide is confidential. If you agree to participate, please PRINT your name and SIGN it on the last page. You will receive two copies – you keep one copy and turn the other one in to me. Please raise your hand when you are finished and we will pick up the informed consent.

Do you have any questions?

Now, I will hand out the surveys. You will receive an identification number that you will see on the first page of the survey. The purpose of this number is to link the surveys that you will be completing at the three different time points. The researcher will keep the key that links your

identification number to your name confidential. raise your hand when you are finished and we will pick up the surveys.

If you do not wish to participate, please work or use your device quietly while others complete the surveys.

Do you have any questions now?

If you have questions later, please contact me. My contact information as well as the Institutional Review Board's contact information is listed on the informed consent sheet.

APPENDIX F: INFORMED CONSENT FORM LANGUAGE

PURPOSE OF STUDY

This study will include student-athletes currently competing on the University of Indianapolis' Athletics Teams. The purpose of this project is to further understand the effects and relationships between perceptions relating to sport motivation and multi-dimensional wellness of NCAA Division II athletes.

PARTICIPATION

You must be 18 years old to participate and be able to read and speak English. Your participation in this study is voluntary. If you decide to participate now and change your mind at a later time, then you may withdraw at any time without penalty. If you withdraw from the study before data collection is completed, then your data will be destroyed.

PROCEDURES

As part of this study, you must first give your informed consent. You should read this informed consent document and ask any questions before you sign the document. If you choose NOT to consent and participate, then you should not sign this document or complete any of the surveys. In order to protect your privacy and the privacy of your teammates, you should remain in the room and work on other tasks without disturbing your teammates.

If you consent to participate, then you will be asked to complete a demographic/historical questionnaire, sport motivation scale, and multi-dimensional wellness inventory. The study will have best results when you answer truthfully all questions. However, you may choose to skip and not answer any question. As part of this study, you will be asked to complete these aforementioned surveys during your pre-season and the sport motivation scale again during your in- season and off-season time periods. The surveys will take approximately 20-30 minutes to complete at the first data collection time point and 5 minutes at the second and third data collection time points.

RISKS AND BENEFITS

The investigators do not intend or guarantee that you will receive any benefit from participating in this study. Your participation will, however, provide valuable information—for researchers and

collegiate coaches at large —about various aspects of sports psychology associated with sport motivation and personal wellness related to collegiate athletes.

There are few foreseeable risks associated with this study, such as risks to your privacy and the confidentiality of your information. Participation in the study will in no way affect your grades in courses for which you are registered or the status of your athletic participation. The researcher will ask your coaches to leave the room before discussing the study and until the last participant finishes the surveys. Your coaches will have no knowledge of who does or does not participate in the study. However, the researcher will be collecting your name in order to connect your responses between the first time you take the survey and the second and third times. Given this, there is a slight risk of breach of confidentiality. The researcher will make all efforts to avoid this breach (e.g., assigning a randomly generated identification number to code your information, transporting data in a secure and timely manner, and keeping data in a locked cabinet and/or on a password protected computer). You should also protect your own privacy and the privacy of your teammates by not discussing participation outside of this team meeting.

Due to the number of surveys for the first data collection time point and the length of time to complete them, you may experience some physical discomforts, such as weariness and fatigue. If you experience any physical discomfort, then you should stop momentarily to rest, stretch or otherwise relieve the discomforts. While completing the surveys you may also experience some psychological/emotional discomfort due the nature of the questions. You may choose to skip and not answer any question. You may also choose to stop your participation at any time without penalty.

COMPENSATION

There will be no compensation for participation in the present study.

CONFIDENTIALITY

Your information will be used only for the purposes of this study. No individually identifiable information will be made available to any party other than those that are part of this study. Although the researcher will collect your name in order to connect your data across each of the three data collection events, the researcher will assign a random number to code (i.e., de-identify) your information in order to protect confidentiality. The data will be used in aggregated form

only and no identifiable information will be linked to the data upon reporting. All physical data will be destroyed after the conclusion of this study.

CONSENT

The researcher has informed me of the risks and benefits of participating in this research study. I have asked questions and I have received answers that help me better understand the risks and benefits. I have thought about the risks and benefits, and I consent to be a research subject in this study.

If you **consent** to take part in the study, please sign and date both copies of the informed consent document. You will keep one copy and turn in the other copy with your survey answers. If you do not give consent, do not sign this form and sit quietly while others complete the surveys.

Your Signature: _____

Today's Date: _____

Your Printed Name: _____

APPENDIX G: SCRIPT- SECOND AND THIRD DATA COLLECTION TIME POINTS

Thank for your joining me today. Again, my name is _____. I would like to thank those of you who had completing the first set of surveys and for participating in our research study.

I have come back to ask you to complete another set of surveys. The purpose of our study remains as I am studying the relationships as it relates to perceptions and behaviors in sport motivation and multi-dimensional wellness of NCAA Division II athletes.

However, I am now asking those of you who participated previously to complete sport motivation survey again. It will take you approximately 3 minutes to complete this survey. As a reminder, participation will in no way affect your grades. We will, again, ask your coach to leave the room before discussing the study and until the last participant finishes the surveys, so that your coaches have no knowledge of who does or does not participate in the study.

Now, I will hand out the survey. Yet again, you will receive an identification number that you will see on the first page of the survey. The purpose of this number is to continue to link these surveys that you will be completing over the three time points we have discussed. Please raise your hand when you are finished and I will pick up the surveys.

If you do not wish to participate, I ask that you sit quietly while others complete the surveys.

If you have decided you would like to participate in the study, please raise your hand and I will come to you and further discuss the study's parameters and informed consent procedures.

Do you have any questions?

APPENDIX H: DATA SUMMARY TABLES

Table H.1

Research aim 1a: Repeated measures ANOVAs for sport motivation types

Type	ε	*Effect*	*SS*	*df*	*MS*	*F*	*p*
IR	N/A	time	56.052	2	28.026	3.663	.026*
		Error (time)	5431.948	710	7.651		
INTR	.974[a]	time	225.848	1.948[b]	116.590[b]	15.749	.001***[b]
		Error (time)	5090.818	691.388[b]	7.403[b]		
IDR	.953[a]	time	86.006	1.917[b]	45.105[b]	5.886	.003*[b]
		Error (time)	5187.328	680.470[b]	7.663[b]		
ITR	.969[a]	time	18.225	1.937[b]	9.458[b]	.828	.434[b]
		Error (time)	7817.775	687.696[b]	11.429[b]		
EXTR	.976[a]	time	67.727	1.952[b]	33.333[b]	3.074	.048*[b]
		Error (time)	7475.273	693.086[b]	10.844[b]		
AMR	.986[a]	time	180.165	1.972[b]	91.885[b]	8.213	.001***[b]
		Error (time)	7787.835	699.894[b]	11.188[b]		

*$p \leq .05$

**$p \leq .01$

***$p < .001$

[a]Requirements for sphericity were not met, Huynh-Feldt score
[b]Huynh-Feldt corrected *df*, *MS*, and *p* were used

Table H.2

Research aim 1a: Descriptive statistics/post hoc tests with Bonferroni corrections

							Based on estimated marginal means				
							Mean			95% CI[b]	
	PS	IS	OS		*(I)*	*(J)*	*Difference*			*Lower*	*Upper*
Type	*M(SD)*	*M(SD)*	*M(SD)*	*N*	*time*	*time*	*(I-J)*	*SE*	*Sig.[b]*	*Bound*	*Bound*
IR	16.17(4.13)	16.11(4.21)	16.33(4.15)	356	PS	IS	.556*	.213	.028	.044	1.069
						OS	.343	.208	.299	-.157	.842
					IS	PS	-.556*	.213	.028	-1.069	-.044
						OS	-.213	.201	.867	-.697	.270
					OS	PS	-.343	.208	.299	-.842	.157
						IS	.213	.201	.867	-.270	.697
INTR	17.58(3.29)	16.69(3.69)	16.53(4.05)	356	PS	IS	.882*	.185	.000	.437	1.327
						OS	1.048*	.199	.000	.568	1.527
					IS	PS	-.882*	.185	.000	-1.327	-.437
						OS	.166	.216	1.000	-.355	.686
					OS	PS	-1.048*	.199	.000	-1.527	-.568
						IS	-.166	.216	1.000	-.686	.355
IDR	17.12(3.62)	16.89(3.80)	16.43(4.09)	356	PS	IS	.228	.179	.612	-.203	.658
						OS	.683*	.213	.004	.170	1.195
					IS	PS	-.228	.179	.612	-.658	.203
						OS	.455	.214	.102	-.059	.969
					OS	PS	-.683*	.213	.004	-1.195	-.170
						IS	-.455	.214	.102	-.969	.059
ITR	13.68(4.64)	13.37(4.61)	13.47(4.75)	356	PS	IS	.315	.224	.485	-.225	.854
						OS	.208	.266	1.000	-.432	.847
					IS	PS	-.315	.224	.485	-.854	.225
						OS	-.107	.254	1.000	-.718	.505
					OS	PS	-.208	.266	1.000	-.847	.432
						IS	.107	.254	1.000	-.505	.718
EXTR	8.99(4.76)	9.41(4.54)	9.57(4.77)	356	PS	IS	-.421	.223	.177	-.957	.114
						OS	-.584	.247	.055	-1.178	.009
					IS	PS	.421	.223	.177	-.114	.957
						OS	-.163	.259	1.000	-.786	.460
					OS	PS	.584	.247	.055	-.009	1.178
						IS	.163	.259	1.000	-.460	.786
AMR	6.93(4.11)	7.82(4.31)	7.78(4.73)	356	PS	IS	-.888*	.230	.000	-1.442	-.334
						OS	-.854*	.254	.003	-1.465	-.243
					IS	PS	.888*	.230	.000	.334	1.442
						OS	.034	.259	1.000	-.590	.658
					OS	PS	.854*	.254	.003	.243	1.465
						IS	-.034	.259	1.000	-.658	.590

*. The mean difference is significant at the .05 level.

[b]. Adjustment for multiple comparisons: Bonferroni.

Table H.3

Research aim1b and 1c: 2x2x3 mixed ANOVA design for sport motivation types

Type	ε	*Effect*	*SS*	*df*	*MS*	*F*	*p*
IR	N/A	time	73.010	2	36.505	4.885	.008**
		time*sex	92.489	2	46.245	6.188	.002**
		time*type	92.534	2	46.267	6.191	.002**
		time*sex*type	3.120	2	1.560	.209	.812
		Error (time)	5261.407	704	7.474		
INTR	.981[a]	time	256.106	1.962[b]	130.527[b]	18.224	.001***[b]
		time*sex	96.568	1.962[b]	49.217[b]	6.871	.001**[b]
		time*type	47.242	1.962[b]	24.007[b]	3.362	.036*[b]
		time*sex*type	5.863	1.962[b]	2.988[b]	.417	.655[b]
		Error (time)	4946.835	690.656[b]	7.163[b]		
IDR	.961[a]	time	78.804	1.923[b]	40.986[b]	5.470	.005**[b]
		time*sex	11.566	1.923[b]	6.016[b]	.803	.444[b]
		time*type	89.421	1.923[b]	46.508[b]	6.207	.002**[b]
		time*sex*type	8.961	1.923[b]	4.661[b]	.622	.531[b]
		Error (time)	5071.481	676.791[b]	7.493[b]		
ITR	.979[a]	time	23.227	1.931[b]	12.027[b]	1.056	.346[b]
		time*sex	62.253	1.931[b]	31.126[b]	2.831	.062[b]
		time*type	8.878	1.931[b]	4.597[b]	.404	.661[b]
		time*sex*type	2.313	1.931[b]	1.198[b]	.105	.894[b]
		Error (time)	7739.264	679.809[b]	11.384[b]		
EXTR	.984[a]	time	55.052	1.968[b]	27.978[b]	2.612	.075[b]
		time*sex	20.048	1.968[b]	10.189[b]	.951	.386[b]
		time*type	31.188	1.968[b]	15.851[b]	1.480	.229[b]
		time*sex*type	1.164	1.968[b]	.592[b]	.055	.944[b]
		Error (time)	7419.646	683.003[b]	10.713[b]		
AMR	.993[a]	time	172.938	1.986[b]	87.084[b]	7.937	.001***[b]
		time*sex	18.656	1.986[b]	9.394[b]	.856	.425[b]
		time*type	98.835	1.986[b]	49.769[b]	4.536	.011*[b]
		time*sex*type	10.807	1.986[b]	5.442[b]	.496	.608[b]
		Error (time)	7669.229	699.032[b]	10.971[b]		

*$p \leq .05$

**$p \leq .01$

***$p < .001$

[a]Requirements for sphericity were not met, Huynh-Feldt score
[b] Huynh-Feldt corrected df, MS, and *p* were used

Table H.4

Research aim 1b: Descriptives/Post hoc tests with Bonferroni corrections for interactive/coactive SAs

					Based on estimated marginal means				
					Mean			95% CI[b]	
					Difference			*Lower*	*Upper*
Type	Team Type	Time	*M(SD)*	*N*	*(I-J)*	*SE*	*Sig.*[b]	*Bound*	*Bound*
	Interactive (I)	PS	16.71(4.07)	192	.073	.455	.873	-.822	0.967
	Coactive(J)		16.46(4.27)	164	-.073	.455	.873	-.967	.822
IR	*Interactive (I)*	IS	15.65(4.33)	192	-1.371*	.458	.003	-2.272	-.470
	Coactive(J)		16.67(4.11)	164	1.371*	.458	.003	.470	2.272
	Interactive (I)	OS	16.17(4.25)	192	-.999*	.452	.028	-1.888	-.109
	Coactive(J)		16.81(3.84)	164	.999*	.452	.028	.109	1.888
	Interactive (I)	PS	17.51(3.48)	192	-0.136	.362	.708	-.847	0.576
	Coactive(J)		17.43(3.25)	164	0.136	.362	.708	-.576	0.847
INTR	*Interactive (I)*	IS	16.57(3.92)	192	-.530	.404	.191	-1.326	.265
	Coactive(J)		16.87(3.51)	164	.530	.404	0.191	-.265	1.326
	Interactive (I)	OS	16.30(4.25)	192	-1.195*	.438	.007	-2.057	-.333
	Coactive(J)		17.10(3.49)	164	1.195*	.438	0.007	.333	2.057
	Interactive (I)	PS	17.25(3.56)	192	.220	.396	.579	-.560	1.000
	Coactive(J)		16.88(3.64)	164	-.220	.396	.579	-1.000	0.560
IDR	*Interactive (I)*	IS	16.60(3.88)	192	-1.102*	.413	.008	-1.915	-.288
	Coactive(J)		17.31(4.57)	164	1.102*	.413	.008	.288	1.915
	Interactive (I)	OS	16.16(4.15)	192	-1.005*	.447	.025	-1.884	-.126
	Coactive(J)		16.82(4.01)	164	1.005*	.447	.025	.126	1.884
	Interactive (I)	PS	13.02(4.81)	192	-1.680*	.504	.001	-2.672	-.688
	Coactive(J)		14.25(4.21)	164	1.680*	.504	0.001	.688	2.672
ITR	*Interactive (I)*	IS	13.04(4.65)	192	-1.536*	.503	.002	-2.525	-.547
	Coactive(J)		13.85(4.47)	164	1.536*	.503	0.002	.547	2.525
	Interactive (I)	OS	13.06(4.91)	192	-1.226*	.516	0.018	-2.241	-.210
	Coactive(J)		13.94(4.40)	164	1.226*	.516	0.018	.210	2.241
	Interactive (I)	PS	9.04(4.99)	192	.086	.526	.870	-.948	1.120
	Coactive(J)		9.01(5.61)	164	-.086	.526	.870	-1.120	.948
EXTR	*Interactive (I)*	IS	9.78(4.80)	192	.689	.501	.170	-.297	1.675
	Coactive(J)		8.95(4.29)	164	-.689	.501	0.170	-1.675	.297
	Interactive (I)	OS	9.78(4.80)	192	.931	.524	.076	-.099	1.961
	Coactive(J)		9.11(4.31)	164	-.931	.524	0.076	-1.961	.099
	Interactive (I)	PS	7.20(4.31)	192	.198	.452	.661	-0.690	1.087
	Coactive(J)		7.13(4.13)	164	-.198	.452	.661	-1.087	.690
AMR	*Interactive (I)*	IS	8.51(4.47)	192	1.298*	.470	.006	.374	2.222
	Coactive(J)		7.32(4.14)	164	-1.298*	.470	0.006	-2.222	-.374
	Interactive (I)	OS	8.38(4.92)	192	1.693*	.511	.001	.688	2.699
	Coactive(J)		7.05(4.22)	164	-1.693*	.511	0.001	-2.699	-.688

*. The mean difference is significant at the .05 level.

[b]. Adjustment for multiple comparisons: Bonferroni.

Table H.5

Research aim 1c: Descriptives/post hoc tests with Bonferroni corrections for male/female SAs

					Based on estimated marginal means				
					Mean			95% CI[b]	
					Difference			*Lower*	*Upper*
Type	Sex	Time	*M(SD)*	*N*	*(I-J)*	*SE*	*Sig.*[b]	*Bound*	*Bound*
	Male (I)	PS	16.54(4.25)	222	-.551	.455	.227	-1.445	0.344
	Female (J)		16.73(3.97)	134	-.551	.455	.227	-.344	1.445
IR	*Male (I)*	IS	16.20(4.22)	222	.397	.458	.386	-0.504	1.298
	Female (J)		15.94(4.34)	134	-.397	.458	.386	-1.298	.504
	Male (I)	OS	16.78(3.93)	222	.929*	.452	.041	.039	1.819
	Female (J)		15.94(4.26)	134	-.929*	.452	.041	-1.819	-.039
	Male (I)	PS	17.45(3.44)	222	-0.091	.362	.802	-.802	0.621
	Female (J)		17.51(3.26)	134	0.091	.362	.802	-.621	0.802
INTR	*Male (I)*	IS	16.83(3.78)	222	.601	.404	.138	-0.194	1.397
	Female (J)		16.47(3.65)	134	-.601	.404	0.138	-1.397	.194
	Male (I)	OS	17.14(3.59)	222	1.439*	.438	.001	0.577	2.301
	Female (J)		15.87(4.33)	134	-1.439*	.438	0.001	-2.301	-.577
	Male (I)	PS	17.30(3.57)	222	.464	.396	.242	-.316	1.244
	Female (J)		16.68(3.62)	134	-.464	.396	.242	-1.244	0.316
IDR	*Male (I)*	IS	17.02(3.68)	222	.594	.413	.152	-.219	1.407
	Female (J)		16.72(3.91)	134	-.594	.413	.152	-1.407	.219
	Male (I)	OS	16.79(4.00)	222	.974*	.447	.030	0.095	1.853
	Female (J)		15.92(4.19)	134	-.974*	.447	.030	-1.853	-.095
	Male (I)	PS	13.76(4.49)	222	.436	.504	.388	-.556	1.428
	Female (J)		13.17(4.78)	134	-.436	.504	0.388	-1.428	.556
ITR	*Male (I)*	IS	13.51(4.45)	222	.241	.503	.632	-.748	1.229
	Female (J)		13.20(4.82)	134	-.241	.503	0.632	-1.229	.748
	Male (I)	OS	13.91(4.60)	222	1.390*	.516	0.007	.375	2.405
	Female (J)		12.72(4.74)	134	-1.390*	.516	0.007	-2.405	-.375
	Male (I)	PS	9.29(4.75)	222	.397	.526	.450	-.637	1.431
	Female (J)		8.51(4.92)	134	-.397	.526	.450	-1.431	.637
EXTR	*Male (I)*	IS	9.48(4.57)	222	-.158	.501	.753	-1.144	.828
	Female (J)		9.25(4.64)	134	.158	.501	0.753	-.828	1.144
	Male (I)	OS	9.75(4.88)	222	.486	.524	.354	-.544	1.516
	Female (J)		9.06(4.36)	134	-.486	.524	0.354	-1.516	.544
	Male (I)	PS	7.58(4.31)	222	.811	.452	.074	-0.078	1.699
	Female (J)		6.37(3.94)	134	-.811	.452	.074	-1.699	.078
AMR	*Male (I)*	IS	8.22(4.40)	222	.253	.470	.591	-.672	1.177
	Female (J)		7.47(4.26)	134	-.253	.470	0.591	-1.177	.672
	Male (I)	OS	8.14(4.89)	222	.858	.511	.094	-.148	1.863
	Female (J)		6.97(4.05)	134	-.858	.511	0.094	-1.863	.148

*. The mean difference is significant at the .05 level.

[b]. Adjustment for multiple comparisons: Bonferroni.

Table H.6

Research aim 2a: 2x2 factorial MANOVA multivariate tests results for nine wellness dimensions in SAs

Wilk's Λ	*Effect*	*F*	*df*	*Error df*	*p*	η^2
.881	sex	6.748	9	451	.001***	0.119
.914	course completion	4.718	9	451	.001***	0.086
.962	sex * course completion	1.976	9	451	.040*	0.038

*$p \leq .05$

**$p \leq .01$

***$p < .001$

Table H.7

Research aims 2a-c: MANOVA univariate tests results for nine wellness dimensions in SAs

Effect	*DV*	*SS*	*df*	*MS*	*F*	*p*	η^2
Sex	PWE	6.842	1	6.842	1.363	.244	.003
	PWN	107.446	1	107.446	9.917	.002**	.021
	MW	.750	1	.750	.133	.715	.000
	SW	70.429	1	70.429	14.173	.001***	.030
	SPW	31.391	1	31.391	8.113	.005**	.017
	IW	.210	1	.210	.033	.855	.000
	EW	60.436	1	60.436	8.429	.004**	.018
	OW	27.922	1	27.922	5.239	.023*	.011
	FW	11.820	1	11.820	1.741	.188	.004
Course Completion	PWE	43.147	1	43.147	8.597	.004**	.018
	PWN	231.251	1	231.251	21.345	.001***	.044
	MW	73.254	1	73.254	13.010	.001***	.028
	SW	61.201	1	61.201	12.316	.001***	.026
	SPW	.777	1	.777	.201	.654	.000
	IW	88.916	1	88.916	14.128	.001***	.030
	EW	13.816	1	13.816	1.927	.166	.004
	OW	78.129	1	78.129	14.658	.001***	.031
	FW	71.797	1	71.797	10.575	.001**	.023
Sex * Course Completion	PWE	32.948	1	32.948	6.565	.011*	.014
	PWN	6.886	1	6.886	.636	.426	.001
	MW	1.135	1	1.135	.202	.654	.000
	SW	2.245	1	2.245	.452	.502	.001
	SPW	.572	1	.572	.148	.701	.000
	IW	14.265	1	14.265	2.267	.133	.005
	EW	6.804	1	6.804	.949	.330	.002
	OW	6.358	1	6.358	1.193	.275	.003
	FW	.119	1	.119	.017	.895	.000
Error	PWE	2303.574	459	5.019			
	PWN	4972.811	459	10.834			
	MW	2584.502	459	5.631			
	SW	2280.923	459	4.969			
	SPW	1776.058	459	3.869			
	IW	2888.801	459	6.294			
	EW	3291.178	459	7.170			
	OW	2446.478	459	5.330			
	FW	3116.181	459	6.789			

*$p \leq .05$

**$p \leq .01$

***$p < .001$

Table H.8

Research aim 2b-c: MANOVA descriptives for nine wellness dimensions in SAs

Dimension	Sex	Course History	*M*	*SD*	*N*
PWE	Male	Not Completed	15.87	2.321	188
		Completed	15.95	2.254	119
		Total	15.90	2.292	307
	Female	Not Completed	15.03	2.249	87
		Completed	16.26	1.960	69
		Total	15.58	2.206	156
	Total	Not Completed	15.60	2.327	275
		Completed	16.06	2.151	188
		Total	15.79	2.266	463
PWN	Male	Not Completed	12.87	3.512	188
		Completed	14.13	3.063	119
		Total	13.36	3.396	307
	Female	Not Completed	13.64	3.242	87
		Completed	15.42	3.103	69
		Total	14.43	3.292	156
	Total	Not Completed	13.12	3.442	275
		Completed	14.60	3.133	188
		Total	13.72	3.396	463
MW	Male	Not Completed	15.18	2.505	188
		Completed	16.13	2.251	119
		Total	15.55	2.451	307
	Female	Not Completed	15.20	2.307	87
		Completed	15.94	2.287	69
		Total	15.53	2.321	156
	Total	Not Completed	15.18	2.440	275
		Completed	16.06	2.260	188
		Total	15.54	2.405	463
SW	Male	Not Completed	15.82	2.319	188
		Completed	16.75	2.214	119
		Total	16.18	2.320	307
	Female	Not Completed	16.80	2.172	87
		Completed	17.43	2.069	69
		Total	17.08	2.143	156
	Total	Not Completed	16.13	2.316	275
		Completed	17.00	2.182	188
		Total	16.48	2.300	463

Table H.8 Continued

Research aim 2b-c: MANOVA descriptives for nine wellness dimensions in SAs

Dimension	Sex	Course History	*M*	*SD*	*N*
SPW	Male	Not Completed	14.80	2.055	188
		Completed	14.97	1.987	119
		Total	14.87	2.027	307
	Female	Not Completed	15.44	1.909	87
		Completed	15.45	1.745	69
		Total	15.44	1.832	156
	Total	Not Completed	15.00	2.028	275
		Completed	15.14	1.911	188
		Total	15.06	1.981	463
IW	Male	Not Completed	15.32	2.457	188
		Completed	15.88	2.617	119
		Total	15.54	2.531	307
	Female	Not Completed	14.99	2.704	87
		Completed	16.30	2.178	69
		Total	15.57	2.563	156
	Total	Not Completed	15.21	2.538	275
		Completed	16.04	2.468	188
		Total	15.55	2.539	463
EW	Male	Not Completed	14.00	2.720	188
		Completed	14.63	2.636	119
		Total	14.24	2.701	307
	Female	Not Completed	15.03	2.755	87
		Completed	15.14	2.528	69
		Total	15.08	2.649	156
	Total	Not Completed	14.33	2.769	275
		Completed	14.82	2.602	188
		Total	14.53	2.710	463

Table H.8 Continued

Research aim 2b-c: MANOVA descriptives for nine wellness dimensions in SAs

Dimension	Sex	Course History	*M*	*SD*	*N*
OW	Male	Not Completed	15.56	2.209	188
		Completed	16.19	2.545	119
		Total	15.81	2.361	307
	Female	Not Completed	15.84	2.420	87
		Completed	16.97	1.978	69
		Total	16.34	2.299	156
	Total	Not Completed	15.65	2.277	275
		Completed	16.48	2.377	188
		Total	15.99	2.351	463
FW	Male	Not Completed	13.74	2.484	188
		Completed	14.55	2.496	119
		Total	14.06	2.516	307
	Female	Not Completed	13.37	2.882	87
		Completed	14.25	2.746	69
		Total	13.76	2.847	156
	Total	Not Completed	13.63	2.617	275
		Completed	14.44	2.588	188
		Total	13.96	2.633	463

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CURRICULUM VITAE

Mindy M. Mayol

EDUCATION

Ph.D. **Health and Rehabilitation Sciences**, *Indiana University, Indianapolis, IN*
Concentration: Functional Participation/Limitation
Minor: Public Health- Social & Behavioral Sciences
January 2018

M.S. **Kinesiology**, *Indiana University, School of Public Health (formerly School of HPER): Bloomington, IN*
Emphasis: Applied Sport Science
December 1998

B.S. **Kinesiology,** *Indiana University, School of Public Health (formerly School of HPER): Bloomington, IN*
Emphasis: Exercise Science
August 1997

PROFESSIONAL EXPERIENCE: ACADEMIC

University of Indianapolis: Indianapolis, IN August 2003 - present
College of Health Sciences- Department of Kinesiology,
Assistant Professor *(2014 –present); Instructor (2009-2014); Associate Adjunct Faculty (2007-2009); Adjunct (2003-2007)*

- Served as a Search Committee member for an Assistant Professor in Exercise Science (x2) (2016)
- Assisted in the 2nd successful accreditation of Exercise Science program through CAAHEP/ACSM (2016-2017)
- Assisted in the successful accreditation of Exercise Science program through CAAHEP/ACSM, which was the 1st accredited program in the state of Indiana (2011-2012)
- Assisted in the development of the new undergraduate curriculum revision for the Exercise Science major in Kinesiology Department (2015)
- Assisted in the first Faculty Wellness Initiative as a Wellness Coach for the KINS 490 Exercise Prescription Project; the University of Indianapolis President was a participant (2014)
- Developed and managed multiple research projects and oral presentation involving dissemination at regional and national conferences by over 50 undergraduate and graduate students (2011 to current)
- Continue to serve as an academic adviser to 45-60 undergraduate Exercise Science majors annually.
- Continue to serve as a wellness coach to undergraduate Healthy Diploma students annually.

Current Teaching/Administrative Load:

- KINS280 Sport, Exercise & Health Behavior (August 2013 to present):

-Coordinate course curriculum and experiential/applied programming for students learning sport psychology and exercise and health behavior theoretical applications as well as experiential opportunities required for Exercise Science majors.

• KINS331 Health & Wellness Coaching (August 2014 to present):
-Coordinate course curriculum and experiential/applied programming for students learning coaching psychology and health behavior theoretical applications as well as experiential opportunities for Exercise Science and Public Health majors.

• KINS356 Exercise Programming & Management (August 2017 to present):
-Coordinate course curriculum and experiential/applied programming for students learning exercise programming and management of fitness facilities as well as experiential opportunities for Exercise Science majors.

• KINS395 Exercise Science Internship Practicum, *Internship Coordinator,* (August 2008 to present):
-Advise junior and senior-level exercise science students for preparation, commencement and ending of external 6 or 12 credit hour internship / capstone course
-Work directly with the student intern and the internship site supervisor to monitor student's performance, attendance, progression and overall evaluation.
-Train and supervise other exercise science faculty members who serve as intern supervisors

• KINS106 New Student Experience in Kinesiology (August 2014 to present):
- Lecture and activity sessions of for freshmen-level Kinesiology students

• KINS101 Wellness and Fitness for a Lifetime, *Student Wellness Course Coordinator,* (August 2007 to present): *Required 1 credit hour course for all undergraduate students.
-Coordinate the course curriculum and programming as well as manage all KINS101 instructors
-Lecture and activity sessions of wellness course
-Coordinate the Health Appraisal Day- health and fitness testing for all KINS 101 Wellness courses (~800 students per year) and Healthy Diploma concentration students (~90 students per year)
- Use of my textbook in KINS101 course: *Wellness: The Total Package*, 2nd Edition, Mayol, 2008, 2012 © Kendall/Hunt Publishing Company, Dubuque, IA

• KINS104 Honors Wellness and Fitness for a Lifetime (August 2009 to May 2017): *Required 2 credit hour course for all undergraduate students in the Honors College and students admitted to the Healthy Diploma™ concentration program.
-Coordinate the course curriculum and programming aligning goals and needs with the Honors College as well as manage all KINS104 instructors
- Lecture and activity sessions of wellness course- additional practical and experiential application for Honors College students
- Use of textbook in KINS104 course: *Wellness: The Total Package*, 2nd Edition, Mayol, 2008, 2012 © Kendall/Hunt Publishing Company, Dubuque, IA

Courses Taught previously / Previous duties at the University of Indianapolis:

• KINS102 Advanced Wellness and Fitness for a Lifetime (January 2010 to 2016):

- Lecture and activity sessions of wellness course- continuation of KINS101 application along with additional practical and experiential application for Healthy Diploma concentration students

• KINS315 Professional Seminar in Kinesiology (January 2014 to May 2014):
-Coordinate course curriculum and experiential/applied programming for students; required for Kinesiology majors.

• KINS325 Exercise Leadership & Programming (January 2011 to May 2013):
-Coordinate course curriculum and experiential/applied programming for students learning group exercise methods and techniques required for Kinesiology majors.

• Healthy Diploma™ Co-coordinator (2009 to 2014):
-Work the Founder/Kinesiology Chairperson and with fellow Healthy Diploma™ Coordinators re: development, promotion, implementation and continuation of this concentration.

• Healthy Diploma™ Personal Health Project Advisor (August 2009-2015):
- Worked with upperclassmen Healthy Diploma™ students on their process to begin and complete their final personal health projects:
-Spring 2015: "Mommy on the Run" (presented April 29, 2015)
-Spring 2012: "Incorporating Healthy Recipes into a Healthy Lifestyle" (presented April 25, 2012)
-Spring 2012: "Incorporating Healthy Exercise and Nutrition Goals Upon Retiring from Collegiate Sport" (presented April 25, 2012)

• Honors College- Honors Project Advisor (2009- 2013):
-Worked with upperclassmen Honors College students throughout the Honors College Project process:
-2011-2013: "Wellness and Fitness Trail: A Service Project with a New Approach to Healthy Living" (presented April 9, 2013)
-2011-2012: "Are We Practicing What We Preach?" (presented March 30, 2012)
-2009-2011: "The Evaluation and Designing of a Developmentally Appropriate Playground" (presented April 7, 2011)

• RUIndyFit Pedometer Walking Program Coordinator (August 2009 to May 2011):
-Work the Kinesiology Chairperson and with fellow Kinesiology colleagues re: redevelopment, promotion, implementation and continuation of this 12-week faculty/staff pedometer walking program

• KINS405 Cardiovascular Training and Performance (August 2007; January 2009):
- Lecture and laboratory sessions on cardiovascular exercise prescription basics for apparently healthy adults and special populations

• KINS250 First Aid and CPR (August 2007 to December 2008):
-Lecture and skills sets following American Red Cross's *Responding to Emergencies* curriculum

• KINS190 Foundations of Physical Education, Fitness and Sport (August 2003)
-Taught lecture and hosted guest speakers/experts on the history of fitness and sport along with topics such as corporate fitness, research & exercise physiology, sports psychology and physical education

• KINS375 Progressive Resistance Training and Sports Conditioning (August 2003)
-Taught lecture and laboratory sessions on resistance training exercise prescription basics for apparently healthy adults and special populations

Indiana University: Bloomington, IN August 1997 - May 1998
School of Public Health (formerly known as the HPER), Department of Kinesiology,
Associate Instructor

Courses Taught:

- E119 Personal Fitness
  - -Taught laboratory sessions of this introductory health and wellness course
- E137 Beginning, E237 Intermediate and Advanced Gymnastics
  - -Taught basic principles and techniques of gymnastics and tumbling
- E185 Beginning Volleyball
  - -Taught basic principles and techniques of volleyball
- E219 Weight Control & Exercise
  - -Taught laboratory sessions of this fitness course

PROFESSIONAL EXPERIENCE: NON-ACADEMIC

The Care Group, LLC: Indianapolis, IN June 2004 – June 2007

Marketing & Health Promotion, ***Marketing & Health Promotion Coordinator***

- Served as referring physician liaison for The Care Group- goal to increase cardiology referrals from outside primary care or specialty physicians
- Acted as liaison to The Care Group's Primary Care Physicians Network and coordinate all marketing advertisements, media opportunities, activities and promotions by collectively working with over 10 practice managers for over 30 internists and family practice physicians
- Planned, coordinated and evaluated all marketing activities, community events and promotions for the Women's Cardiac Risk Clinic in conjunction with Dr. Nancy Branyas, Cardiologist with The Care Group, LLC and Medical Director of the Women's Cardiac Risk Clinic
- Established, coordinated, developed and evaluated all marketing projects, events and activities and monitor budgets for the Lighten Up Indiana weight management campaign in conjunction with Dr. Catherine Bain, Endocrinologist with The Care Group, LLC and Medical Director of Lighten Up Indiana, St.Vincent Health and Marsh Pharmacies
- Developed monthly 'Marketing & Health Promotion Newsletter'- an internal publication- highlighting marketing promotions, advertisements and media/public relations activities
- Assisted Medical Education Coordinator with Continuing Medical Education Conferences provided by The Care Group held for local and regional physicians and nurses of various specialties as well as for medics/EMTs (to date: over 15)
- Participated and exhibited in local, regional and state health fairs and screenings (to date: over 50)

St. Vincent Health/Joint Replacement Surgeons of Indiana: Indianapolis, IN March 2003 – June 2004

Center for Joint Replacement, ***Research Assistant***

- Assist the Director of Research with managing prospective as well as retrospective studies in regards to
  total joint replacements with data collection, proposal writing and administrative duties

St. Vincent Health: Indianapolis, IN January 2000 - July 2003 (Department Closed in July 2003).

Health Promotion Services Department, ***Fitness Director***

• Prepared and managed facility budgets along with developing projected annual goals and objectives with membership revenue, program participation and cost-efficient operational expenses

• Maintained current memberships and promoted and marketed two separate facilities to negotiate new enrollments through direct networks with hospital administration and employees, physicians and corporate clientele

• Prepared monthly evaluations of revenue production and program participation

• Responsible for large and small group presentations as well as one-on-one promotion of two fitness centers to drive revenue and increase memberships

• Supervised professional staff, internship program, personal training program, group fitness program and fitness testing and orientation procedures at two facilities

• Instructed group fitness classes (cardiokickboxing, step, indoor cycling, muscle strengthening and seniors)

The National Institute for Fitness and Sport: Indianapolis, IN August 1997 - January 2000

Corporate Fitness Management Department, ***Fitness Facility Manager/Health Fitness Instructor***

• Facilitated relationship agreements and negotiations with the corporate administration and the Corporate Fitness Management Department with yearly budgets for equipment, promotional and marketing materials for fitness programs and screenings

• Performed body composition, muscular strength and endurance, flexibility, submaximal aerobic capacity fitness testing while developing exercise programming for clients

Indiana University: Bloomington, IN December 1996 – July 1998

Division of Recreational Sports, ***Personal Trainer and Strength & Conditioning Consultant***

• Developed cardiovascular, strength, balance and flexibility exercise prescriptions for clients (faculty and students) and instructed clients on appropriate technique and proper use of equipment

• Supervised, monitored and consulted faculty and students with cardiovascular and strength equipment

AWARDS & GRANTS:

- 2017 InQuery/Interdisciplinary Grant Co-Recipients with Nathan Eckert, PhD, and Trent Cayot, PhD, Assistant Professors, UIndy Kinesiology, and Stephanie Combs-Miller, PhD, Associate Professor, UIndy Krannert School of Physical Therapy ($8000)- *Cortical Excitability Alterations in Persons with Parkinson's Disease*
- 2015-2017 InQuery/Interdisciplinary Grant Co-Recipients with Urska Dobersek, PhD, Assistant Professor, UIndy School of Psychological Sciences and K. Lee Everett, PhD, Assistant Professor, UIndy Kinesiology ($7450)- *Perceptions and Behaviors in Collegiate Sport among NCAA Division II Student-Athletes*
- 2014 University of Indianapolis / College of Health Sciences Faculty Achievement Award

- 2012 InQuery/Interdisciplinary Grant Co-Recipient with Brianna Scott, PhD, Assistant Professor, UIndy School of Psychological Sciences ($5000)- *Multi-Dimensional Wellness Inventory: A Validation Study*
- 2010 Indiana AHPERD Recreation Professional / Leisure Educator of the Year Award
- 2004 Indiana State Department of Health Grant ($1000)- Women & Heart Disease Education
- 1997-1998 Graduate Assistantship, Indiana University, School of Public Health (formerly HPER), Bloomington
- 1996-1997 Indiana University Fitness/Wellness Outstanding Council Member
- 1995-96 and 1996-97 Dean's List, Indiana University, Bloomington

PUBLICATIONS:

- Mayol, M.H., Scott, B.M., & Schreiber, J.B. (2017). Validation and use of the Multidimensional Wellness Inventory in collegiate student-athletes and first-generation students. *American Journal of Health Education, 48*(5), 338-350.
- Hancher-Rauch, H., Hicks, L.L., Mayol, M.H., & Wojtyna, A. (2016). Academic and health outcomes from a semester long multi-dimensional wellness course. *Indiana AHPERD Journal, 45*(3), *31-34.*
- Mayol, M.H., Everett, K.L., Scott, B., Orris, K. & Cain, J. Exploring Sport Motivation among NCAA Division II Student-Athletes. *Unpublished Manuscript.*
- Mayol, M.H., Scott, B. & Schreiber, J. Campus Engagement and Personal Wellness Perceptions in Undergraduate Students. *Unpublished Manuscript.*
- Mayol, M.H., Hicks, L.L, & Hancher-Rauch, H., (2013). A Multi-Dimensional Wellness Curriculum with a Multi-Level Focus in Higher Education. *Indiana AHPERD Journal,* 43(1), 5-10.
- Hancher-Rauch, H., Mayol, M.H. & Hicks, L.L & Casselman, K. (2013). Saving your wellness program. *Journal of Physical Education, Recreation and Dance, 84*(6), 29-34. doi: 10.1080/07303084.2013.808125
- Mayol, M.H. (2012). *Wellness: The Total Package*, 2nd Ed.© Kendall/Hunt Publishing Company, Dubuque, IA
- Hancher-Rauch, H., Mayol, M.H. & Hicks, L.L., (2011). University worksite wellness program improves physical, spiritual and intellectual wellness. *Indiana AHPERD Journal, 40*(2), 32-37.
- Hicks, L.L., & Mayol, M.H. (2009). Increasing physical activity in university students: implementing a pedometer program into a required university wellness course. *Indiana AHPERD Journal, 38*(3), 31-34.
- Mayol, M.H. (Winter 2009). Wellness: The total package- A multidimensional approach to wellness for college-aged individuals. *Wellness Management:* A Publication of the National Wellness Institute, 5-7.

PUBLISHED RESEARCH ABSTRACTS:

- Mayol, M.H., Dobersek, U., Everett, K.L. & Beekley, M. (2017). Factors that predict grit in collegiate athletes during the competitive season. *Medicine & Science in Sports & Exercise, 49*(5)S.
- Mayol, M.H., Ransford, B., Dobersek, U., Everett, K.L. & Beekley, M. (2016). Investigating future plans for sport involvement, grit levels and motivation sources in college athletes. *Medicine & Science in Sports & Exercise, 48*(5)S.
- Orris, K., Ritchie, A., Mayol, M.H., Dobersek, U., Everett, K.L. & Beekley, M. (2016). Predictors of grit levels in an NCAA Division II college football team. *Medicine & Science in Sports & Exercise, 48*(5)S.

- Cain, J., Voss, E., Mayol, M.H., Dobersek, U., Everett, K.L. & Beekley, M. (2016). Differences in sport motivation, self-esteem And grit among collegiate swimmers and divers. *Medicine & Science in Sports & Exercise, 48*(5)S.
- Ransford, B., Bryant, L., Mayol, M.H., Dobersek, U., Everett, K.L. & Beekley, M. (2016). Exploring Self-Compassion and Self-Objectification among College Athletes. *Medicine & Science in Sports & Exercise, 48*(5)S.
- Mayol, M.H., Orris, K., Cain, J., Scott, B., Everett, K.L. & Beekley, M. (2015). Predictors of Amotivation in Nine Division II College Athletic Teams. *Medicine & Science in Sports & Exercise, 47*(5)S.
- Orris, K., Cain, J., Mayol, M.H., Scott, B., Everett, K.L. & Beekley, M. (2015). Differences in Social Physique Anxiety and Sport Motivation Among Collegiate Athletes. Medicine & Science in Sports & Exercise, 47(5)S.
- Cain, J., Orris, K., Mayol, M.H., Scott, B., Everett, K.L. & Beekley, M. (2015). Predicting External Regulation in Collegiate Athletes. *Medicine & Science in Sports & Exercise, 47*(5)S.
- Mayol, M.H., Scott, B., & Beekley, M. (2014). Multi-Dimensional Wellness Outcomes among Undergraduate Students: A Comparison Study. *Medicine & Science in Sports & Exercise, 46*(5)S.
- Hicks, L.L., Everett, K.L. & Hartman-Mayol, M. (2014). The Effects of an Extended Wellness and Coaching Program on Blood Profiles in College Students. *Medicine & Science in Sports & Exercise, 46*(5)S.
- Mayol, M.H. & Scott, B. The Relationship between Multi-Dimensional Wellness and Self-Esteem in College Students. (2014). *Research Quarterly for Exercise & Sport, 85*(1): *Research Program Supplement.*
- Mayol, M.H., Scott, B., & Beekley, M. (2013). Assessing a multi-dimensional wellness curriculum by use of an existing inventory: Program outcomes**.** *Medicine & Science in Sports & Exercise, 45*(5)S.
- Mayol, M.H., Scott, B., Hicks, L.L., Hancher-Rauch, H. (2013). Pre/Post Comparison of Nine Constructs within a Multi-Dimensional Wellness Course. *Research Quarterly for Exercise & Sport, 84*(1*): RC Convention Abstract Supplement.*
- Zeltwanger, R., Beekley, M. & Hartman-Mayol, M. (2012). Do kinesiology majors practice what they preach? *Medicine & Science in Sports & Exercise, 44*(5)S.

SCHOLARLY PRESENTATIONS:

2018

- Schreiber, J., Mayol, M.H., & Scott, B.M. (slated for September 21, 2018). Validation and use of the Multidimensional Wellness Inventory in collegiate student-athletes and first-generation students. Health, Wellness & Society, London, England (Oral Presentation).
- Combs-Miller, S., Mayol, M.H., Moore, E., Nicholos, V., Ragano, B., Heron, A. (February 22, 2018). Rate of Progression in Activity and Participation in Exercisers with Parkinson Disease. American Physical Therapy Association – Combined Sections Meeting (CSM), New Orleans, LA (Platform Session).

2017

- Smith, A., Mayol, M.H., & Dobesek, U. (slated for November 10, 2017). Differences between NCAA Division II Male and Female Athletes' motivation types over time. American College of Sports Medicine - Midwest Chapter Annual Meeting, Grand Rapids, MI. (Poster Session).
- Van Sickle, J., Mayol, M.H., Diacin, M., Hancher-Rauch, H., & Everett, K.L. (June 14, 2017). The impact of participating in a community engagement project on students'

receptivity towards and anxiety about working with individuals with intellectual disabilities. International Symposium on Service-Learning, Galway, Ireland (Poster Session).

- Mayol, M.H., Dobersek, U., Everett, K.L. & Beekley, M. (June 2, 2017). Factors that predict grit in collegiate athletes during the competitive season. American College of Sports Medicine-Annual Meeting, Denver, CO (Poster Session).

2016

- Leach, H., Beyer, N., Mayol, M.H., Dobesek, U., & Everett, K.L. (November 4, 2016). Differences between Collegiate Athlete Grit Levels during the Off Season. American College of Sports Medicine - Midwest Chapter Annual Meeting, Fort Wayne, IN. (Poster Session).
- Beyer, N., Leach, H., Mayol, M.H., Dobesek, U., & Everett, K.L. (November 4, 2016). Comparison of Grit Levels in Collegiate Athletes over Time. American College of Sports Medicine - Midwest Chapter Annual Meeting, Fort Wayne, IN. (Poster Session).
- Mayol, M.H., Dobersek, U., Everett, K.L. & Colliver, R. (September 29, 2016). State Self-Esteem and Sport Motivation in NCAA Division II Athletes. American Association for Sport Psychology, Phoenix, AZ (Poster Session).
- Dobersek, U., Mayol, M.H., Everett, K.L., & Colliver, R. (September 29, 2016). Exploration of self-objectification among NCAA Division II student-athletes over time. American Association for Sport Psychology, Phoenix, AZ (Poster Session).
- Everett, K.L., Dobersek, U., & Mayol, M.H. (September 30, 2016). Seasonal differences in grit levels among NCAA Division II football athletes. American Association for Sport Psychology, Phoenix, AZ (Poster Session).
- Dobersek, U., Everett, K.L., Mayol, M.H., & Bryant, L. (June 18, 2016). Investigating Exploring Self-Compassion, Self-Esteem and Grit among Division II Student-Athletes. North American Society for the Psychology of Sport and Physical Activity, Montreal, Quebec, Canada (Poster Session).
- Dobersek, U., Mayol, M.H., Everett, K.L., & Bryant, L. (June 18, 2016). Self-Compassion and Sport Motivation: Do Gender and Class Standing Matter? North American Society for the Psychology of Sport and Physical Activity, Montreal, Quebec, Canada (Oral Presentation).
- Mayol, M.H., Ransford, B., Colliver, R., Dobersek, U., Everett, K.L. & Beekley, M. (June 1, 2016). Investigating Future Plans for Sport Involvement, Grit Levels and Motivation Sources in College Athletes. American College of Sports Medicine-Annual Meeting, Boston, MA (Poster Session).
- Orris, K., Ritchie, A., Mayol, M.H., Dobersek, U., Everett, K.L. & Beekley, M. (June 1, 2016). Predictors of Grit Levels in an NCAA Division II College Football Team. American College of Sports Medicine-Annual Meeting, Boston, MA (Poster Session).
- Cain, J., Voss, E., Mayol, M.H., Dobersek, U., Everett, K.L. & Beekley, M. (June 1, 2016). Differences in Sport Motivation, Self-esteem And Grit Among Collegiate Swimmers And Divers. American College of Sports Medicine-Annual Meeting, Boston, MA (Poster Session).
- Ransford, B., Bryant, L., Mayol, M.H., Dobersek, U., Everett, K.L. & Beekley, M. (June 1, 2016). Exploring Self-Compassion and Self-Objectification among College Athletes. American College of Sports Medicine-Annual Meeting, Boston, MA (Poster Session).

2015

- Ritchie, A., Voss, E., Dobesek, U., Mayol, M.H., & Everett, K.L. (November 6, 2015). Comparison of Motivation Sources and Future Sport Participation among Collegiate

Football Players. American College of Sports Medicine - Midwest Chapter Annual Meeting, Fort Wayne, IN. (Poster Session).

- Ransford, B., Bryant, L., Dobesek, U., Mayol, M.H., & Everett, K.L. (November 6, 2015). Self-Compassion between Team and Individual Athletes. American College of Sports Medicine - Midwest Chapter Annual Meeting, Fort Wayne, IN. (Poster Session).
- Cain, J., Ritchie, A., Dobesek, U., Everett, K.L. & Mayol, M.H. (November 6, 2015). Differences in Gender, First Generation Students and Wellness Levels among Collegiate Athletes. American College of Sports Medicine - Midwest Chapter Annual Meeting, Fort Wayne, IN. (Poster Session).
- Bryant, B., Ransford, B., Dobesek, U., Everett, K.L. & Mayol, M.H. (November 6, 2015). State Self-Esteem and Self-Objectification between More and Less Objectified Sports. American College of Sports Medicine - Midwest Chapter Annual Meeting, Fort Wayne, IN. (Poster Session).
- Wieland, C., Voss, E., Dobesek, U., Mayol, M.H & Everett, K.L. &. (November 6, 2015). Demographic Differences in Grit among NCAA Division II Collegiate Athletes. American College of Sports Medicine - Midwest Chapter Annual Meeting, Fort Wayne, IN. (Poster Session).
- Mayol, M.H., Orris, K., Cain, J., Scott, B., Everett, K.L. & Beekley, M. (May 27, 2015). Predictors of Amotivation in Nine Division II College Athletic Teams. American College of Sports Medicine-Annual Meeting, San Diego, CA. (Poster Session).
- Orris, K., Cain, J., Mayol, M.H., Scott, B., Everett, K.L. & Beekley, M. (May 27, 2015). Differences in Social Physique Anxiety and Sport Motivation Among Collegiate Athletes. American College of Sports Medicine-Annual Meeting, San Diego, CA. (Poster Session).
- Cain, J., Orris, K., Mayol, M.H., Scott, B., Everett, K.L. & Beekley, M. (May 27, 2015). Predicting External Regulation in Collegiate Athletes. American College of Sports Medicine-Annual Meeting, San Diego, CA. (Poster Session).
- McMorrow, S., Mayol, M.H., Hancher-Rauch, H., & Hicks, L.L. (April 25, 2015). Utilizing Cellphones to Facilitate a Modified Photovoice Activity for Teaching Multi-Dimensional Wellness: An Innovative Approach for Increasing Student Engagement and Empowerment. Society for Public Health Education Annual Meeting, Portland, OR. (Oral Presentation).

2014

- Davis, D., Cain, J., Mayol, M.H., Scott, B., & Everett, K.L. (November 7, 2014). The relationship between male and female body esteem perceptions amongst Division II collegiate athletes. American College of Sports Medicine - Midwest Chapter Annual Meeting, Merrillville, IN. (Poster Session).
- Paul, M., Cain, J., Mayol, M.H., Scott, B., & Everett, K.L. (November 7, 2014). Factors that influence self-esteem levels in college athletes. American College of Sports Medicine - Midwest Chapter Annual Meeting, Merrillville, IN. (Poster Session).
- Sharp, J., Orris, K., Cain, J., Mayol, M.H., Scott, B., & Everett, K.L. (November 7, 2014). Comparison of levels of sport confidence in nine NCAA Division II college athletic teams. American College of Sports Medicine - Midwest Chapter Annual Meeting, Merrillville, IN. (Poster Session).
- Cain, J., Orris, K., Mayol, M.H., Scott, B., & Everett, K.L. (November 7, 2014). Investigating sources of sport motivation in Division II collegiate athletes. American College of Sports Medicine - Midwest Chapter Annual Meeting, Merrillville, IN. (Poster Session).
- Whitaker, S., Burkhart, B., Mayol, M.H. & Everett, K.L. (November 7, 2014). The effect of a health and wellness program on multi-dimensional wellness in university faculty.

American College of Sports Medicine - Midwest Chapter Annual Meeting, Merrillville, IN. (Poster Session).

- Hicks, L.L., Mayol, M.H., Sipe, R., Herendeen, D., & Bixler, B. (November 6, 2014). Kettlebells: Increasing strength and burning calories in your program. Indiana Alliance for Health, Physical Education, Recreation and Dance- State Conference, Indianapolis, IN. (Physical Education- Secondary Session- Oral Presentation).
- Hicks, L.L., Everett, K.L. & Mayol, M.H. (May 29, 2014). The Effects of an Extended Wellness and Coaching Program on Blood Profiles in College Students. American College of Sports Medicine-Annual Meeting, Orlando, FL. (Poster Session).
- Mayol, M.H., Scott, B., & Beekley, M. (May 28, 2014). Multi-Dimensional Wellness Outcomes among Undergraduate Students: A Comparison Study. American College of Sports Medicine-Annual Meeting, Orlando, FL. (Poster Session).
- Scott, B., Mayol, M.H., & Schreiber, J. (April 5, 2014). Validation of the Multi-Dimensional Wellness Inventory: A Factor Analytic Approach. American Educational Research Association Annual Meeting, Philadelphia, PA. (Paper presentation- "Wellness, Resilience, and Innovation: Holism and Health in Education and Beyond It" Roundtable Session).
- Mayol, M.H., & Scott, B. (April 3, 2014). The Relationship between Multi-Dimensional Wellness and Self-Esteem in College Students. American Alliance for Health, Physical Education, Recreation and Dance- National Convention, St. Louis, MO. (Research Consortium Poster Presentation).
- Hicks, L.L., Mayol, M.H. & Hancher-Rauch, H. (April 3, 2014). Perceptions of a Targeted University Health & Wellness Program: Healthy Diploma. American Alliance for Health, Physical Education, Recreation and Dance- National Convention, St. Louis, MO. (Research Consortium Poster Presentation).

2013

- Mayol, M.H., Scott, B., Hicks, L.L., Chu, K.S., Miller, P., Oran, M., & Everett, K.L. (November 8, 2013).Comparison of college athletes and non-athletes enrolled in a multi-dimensional wellness course. American College of Sports Medicine - Midwest Chapter Annual Meeting, Merrillville, IN. (Poster Session).
- Kitchen, C., Scott, B., Hicks, L.L., Chu, K.S., Miller, P., Oran, M., Everett, K.L., & Mayol, M.H. (November 8, 2013). The relationship between self-esteem and holistic wellness in college athletes. American College of Sports Medicine - Midwest Chapter Annual Meeting, Merrillville, IN. (Poster Session).
- West, A., Scott, B., Hicks, L.L., Chu, K.S., Miller, P., Oran, M., Everett, K.L., & Mayol, M.H. (November 8, 2013). Pre/Post comparison of college athletes taking a multi-dimensional wellness course. American College of Sports Medicine - Midwest Chapter Annual Meeting, Merrillville, IN. (Poster Session).
- Hartley, J., Hicks, L.L., Mayol, M.H., Kitchen, C., & Everett, K.L. (November 8, 2013). The effects of a wellness coaching program on holistic wellness in college students. American College of Sports Medicine - Midwest Chapter Annual Meeting, Merrillville, IN. (Poster Session).
- Carlton, R., Hicks, L.L., Mayol, M.H., Vickrey, T., Johnson, T., Miller, B., & Gomez, C. (November 1, 2013). Resistance Bands: A safe and economical way to increase strength in your program. Indiana Alliance for Health, Physical Education, Recreation and Dance-State Conference, Indianapolis, IN. (Physical Education- Secondary Session- Oral Presentation).
- Mayol, M.H., Scott, B., & Beekley, M. (May 29, 2013). Assessing a Multi-dimensional Wellness Curriculum by Use of an Existing Inventory: Program Outcomes**.** American College of Sports Medicine-Annual Meeting, Indianapolis, IN. (Poster Session).

- Mayol, M.H., Scott, B., Hicks, L.L., Hancher-Rauch, H. (April 25, 2013). Pre/Post Comparison of Nine Constructs within a Multi-Dimensional Wellness Course. American Alliance for Health, Physical Education, Recreation and Dance- National Convention, Charlotte, NC. (AAHE- Research Consortium Poster Presentation).
- Hicks, L.L., Hancher-Rauch, H., Mayol, M.H. (April 25, 2013). Applying the Coordinated School Health Program to a University Setting. American Alliance for Health, Physical Education, Recreation and Dance- National Convention, Charlotte, NC. (Oral Presentation).
- Mayol, M.H. (April 23, 2013). A Multi-Dimensional Wellness Curriculum. American Alliance for Health, Physical Education, Recreation and Dance- National Convention, Charlotte, NC. (2013 College and University Wellness and Instructional Physical Activity Conference- Innovative Teaching- Oral Presentation).

2012

- Mayol, M.H., Hicks, L.L., Shannon, M., Nothnagel, H., Land, K., & Norton, T. (November 2, 2012). Band Camp: Orchestrating the Use of Resistance Bands for Your Students & Participants. Indiana Alliance for Health, Physical Education, Recreation and Dance- State Conference, West Lafayette, IN. (Fitness Council Session- Oral Presentation).
- Hicks, L.L., Mayol, M.H., Barcome, A.J., Castetter, D., & Johnson, T. (November 2, 2012). KINECT®ing students to physical activity: a motivating experience! Indiana Alliance for Health, Physical Education, Recreation and Dance- State Conference, West Lafayette, IN. (Physical Education- Secondary Session- Oral Presentation).
- Filip, J., Ernst, A., Long, E., Mayol, M.H., Beekley, M. & Everett, K.L. (November 2, 2012). The Effect of an 8-Week Wellness Course on Cardiovascular and Muscular Fitness in Collegiate Females. American College of Sports Medicine - Midwest Chapter Annual Meeting, Oregon, OH. (Poster Session).
- Long, E., Ernst, A., Filip, J., Mayol, M.H., Beekley, M. & Everett, K.L. (November 2, 2012). The Effect of an 8-Week Wellness Course on Body Composition, Flexibility and Muscular Strength in Collegiate Males. American College of Sports Medicine - Midwest Chapter Annual Meeting, Oregon, OH. (Poster Session).
- Mayol, M.H., Hicks, L.L., Hancher-Rauch, H., (July 16, 2012). The link between multidimensional wellness and a higher education institution's multilevel wellness courses. National Wellness Conference, Stevens Point, WI (Poster Session).
- Hancher-Rauch, H., Hicks, L.L., Mayol, M.H. (July 17, 2012). The Tough Stuff: Handling Sensitive Issues and Difficult Questions in the Classroom and Clinic. National Wellness Conference, Stevens Point, WI. (Oral Presentation).
- Hicks, L.L., Mayol, M.H., Hancher-Rauch, H., (July 17, 2012). Healthy Diploma™: Linking Higher Education Wellness with Business. National Wellness Conference, Stevens Point, WI. (Oral Presentation).
- Zeltwanger, R., Beekley, M. & Mayol, M.H., (May 31, 2012). Do kinesiology majors practice what they preach? American College of Sports Medicine - Annual Meeting, San Francisco, CA. (Poster Session).
- Hicks, L.L., Mayol, M.H., & Hancher-Rauch, H. (April18, 2012). Healthy Diploma™: A response from higher education for the health crisis in the U.S. American Art & Science of Health Promotion Conference, San Diego, CA. (Poster Session).
- Hancher-Rauch, H., Hicks, L.L., & Mayol, M.H., (April 19, 2012). Multi-dimensional wellness course. American Art & Science of Health Promotion Conference, San Diego, CA. (Poster Session).
- Mayol, M.H., Hicks, L.L. with selected Kinesiology students. (November 11, 2011). Moving the Milennials to Fitness. Indiana Alliance for Health, Physical Education,

Recreation and Dance- State Conference, Indianapolis, IN. (Fitness Council Session- Oral Presentation).

- Mayol, M.H., Hicks, L.L. with selected Kinesiology students. (November 11, 2011). Sculpting the Future Generation: Strength & Core Training. Indiana Alliance for Health, Physical Education, Recreation and Dance- State Conference, Indianapolis, IN. (Fitness Council Session- Oral Presentation).
- Hancher-Rauch, H., Hicks, L.L., Mayol, M.H. (April 2, 2011). Successfully Advocating for Wellness as a General Education Requirement. American Alliance for Health, Physical Education, Recreation and Dance- National Convention, San Diego, CA. (NASPE/Higher Education Program Session- Oral Presentation).
- Mayol, M.H. (March 18, 2010). Wellness: The Total Package. American Alliance for Health, Physical Education, Recreation and Dance- National Convention, Indianapolis, IN. (AAPAR Program Session- Oral Presentation).
- Hicks, L.L., Mayol, M.H., & Hancher-Rauch, H. (October, 2009). A preliminary exploration of the effects of an incentive pedometer-based intervention on students enrolled in a university wellness course. American College of Sports Medicine - Midwest Chapter Annual Meeting, St. Charles, IL. (Poster Session).

INVITED PRESENTATIONS/INTERVIEWS:

- *Find your best fit*. Interview and article by Courtney Leach with Kit Magazine on Motivation and Exercise (p. 18-19, May-June 2017). www.indykit.org.
- *Factors that predict grit in collegiate athletes during the competitive season*. UIndy Health Pavilion Scholarship Day- Poster Session. (May 19, 2017), Indianapolis, IN.
- *What is Health & Wellness Coaching?* UIndy Healthy Diploma Coaches Bi-Annual Meeting. (January 22, 2016), Indianapolis, IN.
- *Multi-Dimensional Wellness in the Workplace.* Indiana Chamber of Commerce- Wellness Summit. Presented with Shannon McMorrow, PhD. (October 7, 2015), Indianapolis, IN.
- *Promoting an Inclusive Environment: As SAAC, How Do We Lead the Way?* (Speaker Panel). National Collegiate Athletic Association (NCAA)-Diversity and Inclusion Forum. (May 1, 2013), Indianapolis, IN.
- *The Wellness Connection.* University of Indianapolis, SOS Workshop- Student Lecture/Performance Series. (March 30, 2010), Indianapolis, IN.
- *Wellness: The Total Package*. University of Indianapolis, Faculty/Staff Brown Bag Series. (Oct, 2009), Indianapolis, IN.

EDITORIAL/PEER REVIEWS:

- *ACSM's Resources for the Personal Trainer*, 5th Ed., Associate Editor, Wolters-Kluwer (June 2015 to 2017), Release date of publication: September 2017.
- *Coaching Health Behavior Change*, an online text/publication with Bearface Technologies, LLC. (Oct 2015).
- *Experience Wellness*, a prospective hybrid text/publication with McGraw-Hill Higher Education (reviewed June 2011).
- *Wellness for Life*, a prospective online text/publication with Kendall/Hunt Publishing Co. (reviewed March 2011).
- *Fitness/Wellness: A Holistic Approach*, a prospective text/publication with McGraw-Hill Higher Education.
- *Fitness and Wellness: Questions and Answers*, a text/publication with McGraw-Hill Higher Education (reviewed May 2009).
- *Physical Fitness and Activities Online*, a prospective online text/publication with McGraw-Hill Higher Education (reviewed Nov 2009).

PROFESSIONAL SERVICE:

- America College of Sports Medicine's Committee on Certification and Registry Boards' Publications Committee (Appointment Length: August 2017 – June 2020)
- Social Health Association of Indiana, Inc. Board Member (2013-present)
- UIndy Admissions and Honorary Degrees Committee (2017-present)
- Academic Advisory Board Member- Bearface Instructional Technologies, LLC (2012-present)
- UIndy Undergraduate Curriculum Committee (2015-2017)
- UIndy Task Force for Student Conduct & Campus Experience (2013-2015)
- UIndy Diversity & Inclusion Task Force Member (2012-2015)
- UIndy Task Force for Employee Health Benefits (2014-2015)
- UIndy Faculty/Staff Benefits Committee (2010-2012)
  - Elected Chair and Department Representative (2011-2012)
  - Elected Co-chair and Department Representative (2010-2011)
- UIndy AQIP Portfolio Category Valuing People Committee (2013-2014)
- UIndy Pro100 Wellness & Fitness Workshop in Exercise Science (July, 2013)
- Spirit & Place Festival- Just Say Play Volunteer (Nov, 2012)
- UIndy Faculty/Staff Wellness Working Group (2010 - 2015)
  - Goals and initiatives include improving the current wellness culture on campus
  - Coordinated group fitness classes for faculty/staff (2010-2011; 2011-2012)
- UIndy High School Day- Department of Kinesiology Representative (Oct 2010; Oct 2011)
- Volunteer (group fitness events): Indiana Special Olympics State Basketball Tournament, (Mar 2011 - present)
- Indiana Alliance for Health, Physical Education, Recreation and Dance (IAHPERD): Health Council (2009 – 2010)
- Indiana Speaking of Women's Health: Indiana, Steering Committee Member, 2005-2011
- Dining A La Heart/The Care Group, LLC Fundraiser, Planning Committee, 2005; 2006
- The Care Group, LLC American Heart Association's Go Red For Women, Planning Committee, 2005; 2006

PROFESSIONAL CERTIFICATIONS/MEMBERSHIPS/SPECIALTIES:

- American College of Sports Medicine, Certified Exercise Physiologist Certification (formerly the Health Fitness Specialist Certification), since 1998
- American College of Sports Medicine, Professional Member, since 1997
- American College Health Association, Member, since 2013
- American Alliance for Health, Physical Education, Recreation and Dance, Member (2008-2014)
- American Red Cross, First Aid & CPR certification (current)
- American Institute of Fitness Educators, Older Adult Certification, since 2004
- Personal Training Instruction/Exercise Prescription- Adults, Children and Special Populations, since 1998
- Gymnastics Instruction- Recreational and Tumbling Classes and Private Lessons, since 1993
- Specialty Group Fitness Instruction (Older Adult, Bariatric Patients, Indoor Cycling, Strength & Balance Training, Cardiokickboxing), since 2000